



ORCHARD REPLANT/INDUSTRY REVITALIZATION CONSULTATION

BACKGROUND PAPER 3

MARKETING PROFILE

NOVEMBER 1999

**Produced by
Universalia
Management Consulting Firm**



**BRITISH
COLUMBIA**

**Ministry of
Agriculture and Food**

Canadian Cataloguing in Publication Data

Main entry under title:

Marketing profile

At head of title: Orchard replant/industry revitalization consultation background paper 3.

Includes bibliographical references: p.

ISBN 0-7726-4087-4

1. Fruit - British Columbia - Marketing. 2. Fruit trade - British Columbia.
3. Fruit-culture - Economic aspects - British Columbia. 4. Apple industry -
British Columbia. 5. Fruit - Prices. 6. Fruit trade - British Columbia -
Statistics. I. Universal Management Consulting Firm.
II. British Columbia. Ministry of Agriculture and Food. III. Title: Orchard
replant/industry revitalization consultation background paper 3.

HD9254.C33B74 1999 338.1'74'09711 C99-960414-7

Preface

In September 1999 the Minister of Agriculture and Food, Corky Evans, announced his intention to extend the orchard replant program for five years (\$25 million) and to establish a \$2 million industry development trust fund. Final approval of these funds was contingent upon the industry developing a revitalization plan that will ensure the funds are used to the most effective and productive ends possible.

Consultations leading to the development of a revitalization plan are being led by a facilitator contracted by the Ministry of Agriculture and Food. To assist these consultations, four background papers have been prepared to provide up-to-date information regarding the tree fruit industry. These background papers are entitled *Production/Grower Profile*, *Packinghouse and Processing Profile*, *Marketing Profile* and *Economic Analysis of Orchard Replanting*.

Copies of these reports are available from the Ministry of Agriculture and Food and the Okanagan Valley Tree Fruit Authority.

Executive Summary

The report developed a market profile of the B.C. tree fruit industry. It is one of four reports that have been prepared as background material for upcoming consultations with the industry. The objectives of the report were to;

- identify existing reports and other documents that describe and analyze the industry's market profile
- identify additional available resources (databases, key informants etc.) in order to provide additional pertinent information that would inform participants in the consultations, and;
- identify areas in need of further research.

This summary provides key points from the full report.

Trends In Market Prices

- The world market price is primarily dependent on the annual (and increasing) supply and the consumer demand of a specific variety. However, factors such as market access trade alliances, product quality, uniqueness of variety features, and market support functions (e.g., shipping and handling) often figure prominently in influencing product price and the volume of trade. There is a strong variation in prices between the exporting countries
- The price of a variety is primarily influenced by the level of supply of that specific variety. The relationship between the price premium of a variety and the volume on the market is an important consideration in context of the estimated number of new planting of Gala, Fuji and Jonagold varieties globally.
- The trend of B.C. average tree fruit prices and apple and pears varieties is generally flat or downward with a strong price difference existing between the specific varieties of apples.
- B.C. prices for specific grades at the farm level are not readily available from secondary sources. However, this information may be of strong benefit to producers as it would allow them to determine the premium provided by the market for quality.
- Summary from retail and wholesale prices are not readily available making it difficult to track prices over time.

Trends In Market Demand/Consumer Preferences

- Consumers appear to be moving away from the more traditional varieties and demanding access to a range of apple varieties year round. Gala, Fuji, Braeburn and Jonagold are varieties experiencing growth in demand whereas the Red Delicious and Granny Smith varieties are experiencing a decrease in demand (e.g., percent of total market).
- The Washington Apple Commission has made considerable effort to increase their knowledge of consumer preferences.
- Product development focuses on variety research, production/orchard management issues, storage, handling and packing technologies, packaging, and adaptation of new products. Newer packaging and value added snack products are some of the major developments.

Promotion efforts

- The Ontario Apple Commission is committed to the promotion and the development of a brand name Orchard Crisp.

- The Washington Apple Commission now receives 40 cents per box of apples (an increase of 15 cents per box as of August 1998) providing an estimated additional US\$16 million to be used for direct consumer advertising.
- ENZA, New Zealand's export marketing agency, has developed various joint ventures with wholesalers, food brokers and research firms to gain a stronger long-term position within the export markets.¹

Key markets for BC

- The top ten export countries for B.C. include United States, Philippines, Taiwan, Indonesia, Thailand, Mexico, Singapore, United Kingdom, Hong Kong, and Malaysia.
- The effect of the Asian crisis on apple exports was strong. The recovery of these countries' currency and increase of economic growth are the main factors affecting apple export potential.
- United States per capita consumption is high but relatively flat for a developed country. Promotion efforts from the Washington Apple Commission to increase U.S. consumption of apples may have a positive spin-off effect to increase Canadian exports to that market.
- In Canada the natural east to west flow for products provides a potential positive bias for B.C. to supply apples to the domestic market versus Washington.

Overview Of Existing And Potential Competitors In Region's Key Markets

- The major competitors of British Columbia include United States (specifically Washington), Argentina, Chile, New Zealand and other Canadian provinces. In addition, China is a potential large volume, low price exporter.

Marketing Distribution Channels

- The potential for niche markets within the apple sector appears to be low because many of the apple export countries produce a similar variety and are able to ship to import countries around the world. Niche markets may include cherries, large apricots and white-fleshed peaches selling to South East Asia markets in small volumes with price premiums.
- Integrated Fruit Production (IFP) may be an area with market potential for B.C. IFP would allow B.C. to market products as natural and thus provide a slightly differentiated product to the market.
- The potential for organic long term profit and demand are difficult to gauge. Positive issues within organics: Specific B.C. growing areas (e.g., Keremeos) lend themselves well to organic production, and an increase of organic retail outlets. Negative issues: Demand for organics may not be great based upon the space dedicated to organics in the average retail supermarket.
- Based on expert interviews approximately 70% of apples are handled by the cooperative packinghouse while the independent packers handle the balance of 30%. Growers decide to ship to either an independent or a cooperative packer based on their own philosophy of marketing, quality and variety of product, and proximity to packers.
- The Washington and the Ontario Apple Commission are initiating branding efforts. Experts indicated B.C. might be too small to develop and actively promote a brand name.

¹ ENZA web site. <http://www.enzafruit.com.nz> October 31, 1999. Current News Stories section.

Consumption

- 1998 per capita fruit for Canadians is approximately 121 kg. Each Canadian consumes approximately 12 kg of apples.

Global Trends

- The world production levels for 1997 was 53,165 thousands of metric tons. The IMPACT Centre at Washington State University estimates the level of production will continue to increase up to 68,319 thousands of metric tons by the year 2005. The role of China as a future exporter is a real concern for all apple exporters.

Trade Issues

- The World Trade Organization (WTO) issues of prominence include dismantling the complexity of the tariffs in the European Union, Canada's WTO position to complete elimination of export subsidies and trade distorting domestic support, and acceptance of China and Taiwan to the World Trade Organization affecting preferential treatment. China's role as a major exporter of low price apples juice concentrate and product may evolve as a strong trade issue if countries feel dumping of product is occurring.

Retail Issues

- The food retail industry is currently going through a strong consolidation making suppliers' ability to consistently supply high quality fruit imperative.

Contents

<u>1. Introduction</u>	<u>1</u>
<u>2. Methodology</u>	<u>1</u>
<u>3. Organization Of This Report</u>	<u>1</u>
<u>4. Trends In Market Prices Of Competing Jurisdictions</u>	<u>2</u>
4.1 Variety and Trends in Market Prices of Competing Jurisdictions	5
<u>5. Price Trends For B.C. Tree Fruit</u>	<u>7</u>
5.1 Wholesale	7
5.2 Retail	9
5.3 Farm Level	10
<u>6. Trends In Market Demand/Consumer Preferences For Tree fruit</u>	<u>15</u>
6.1 In Canada	15
6.2 In Export Markets	16
<u>7. Trends In Product Development And Promotion</u>	<u>18</u>
7.1 Product Development	18
7.2 Promotion	19
<u>8. Overview Of Key Markets For B.C. Tree Fruits</u>	<u>23</u>
<u>9. Overview Of Existing And Potential Competitors In Region's Key Markets</u>	<u>26</u>
<u>10. Marketing Distribution Channels (In B.C. And Elsewhere)</u>	<u>36</u>
10.1 Niche/Volume	36
10.2 Integrated Fruit Production (IFP)	37
10.3 Organic	37
10.4 Coop/Private Packers	37
10.5 Branded/Unbranded	38
10.6 Estate/Industrial Processing	38
<u>11. Global Tree Fruit Marketing Related Data</u>	<u>39</u>
11.1 Global Trends By Variety And Country Or Region For:	39
11.1.1 Total Consumption	39
11.1.2 Fresh Fruit Consumption	39
11.2 World Production Of Tree Fruits	40
11.3 Tree Fruit Imports And Exports (Sales And Volume)	41

11.4 International Trade And Regulatory Issues	46
11.5 Impact Of Changes In The Retail Sector On Industry Structure	48
12. B.C. Marketing Board	49
13. Summary Of Recommendations For Further Research	49

Exhibits

Exhibit 4.1 Average Prices of Top Ten Fresh Apple Exporting & Importing Countries, 1997	2
Exhibit 4.2 Average Prices of Canada & British Columbia for Apple Exports, 1997	3
Exhibit 4.3 Export Prices for Fresh Apples, Selected Countries (US\$/metric tonne)	3
Exhibit 4.4 Export Prices for Fresh Apples, Selected Countries (US cents/lb)	3
Exhibit 4.5 Average price received by United States Growers (US cents/pound)	3
Exhibit 4.6 Washington Tree Fruit Average Price US \$/Ton 1988- 1997	4
Exhibit 4.7 Average Price Per Pound by Year Apples by Variety	5
Exhibit 4.8 Variety and Percentage of World Production, 1992 -1997	5
Exhibit 4.9 Variety and Percentage of Washington Production, 1992 -1998	5
Exhibit 4.10 Variety and Percentage of British Columbia Production, 1994 - 1997	5
Exhibit 4.11 Variety and Percentage of United States Production, 1992 1997	5
Exhibit 4.12 F.O.B. Prices of Washington Fresh Apples Actual and Projected Based at Average Yields and 1995 Prices.*	6
Exhibit 5.1 Fresh Apple: Weekly Wholesale to Retail Market Prices - Vancouver, October 24, 1999	8
Exhibit 5.2 Average Monthly Retail Prices, Fresh Apples (CDN \$) per 1 Kilogram	9
Exhibit 5.3 Annual Average Retail Prices for Selected Fresh Fruit, United States, 1980 - 1998.	10
Exhibit 5.4 Apple Fresh Wholesale Prices By Variety, Okanagan-Similkameen-Kootenay - 1994 - 1997	11
Exhibit 5.5 Pears Fresh Wholesale Price by Variety, Okanagan-Similkameen-Kootenay - 1994 - 1997	11
Exhibit 5.6 Tree Fruit Fresh Wholesale prices, British Columbia - 1994 - 1997	11
Exhibit 5.7 Tree Fruit Production, BC 1994 -1997	12
Exhibit 5.8 Total Cash Receipts (\$) from Farm Products - Apples by Province and Canada, 1971-1998	12
Exhibit 5.9 B.C. Pear Prices - Fresh Wholesale (1961 -1991)	14
Exhibit 5.10 B.C. Apple Prices - Fresh Wholesale (1961 - 1991)	14
Exhibit 6.1 Volume of Fresh Apples Consumed in Canada, 1960 - 1998	15
Exhibit 6.2 Volume of Various Fresh Fruits Consumed in Canada, 1960 - 1998	15
Exhibit 9.1 World Major Producers of Apples 1997 - 1998 Canadian Competitors	26
Exhibit 9.2 Bearing Acreage for Select Tree Fruits, United States, 1978 to 1998	27
Exhibit 9.3 Total Commercial Production for Select Tree Fruits, United States, 1978 - 1998	28
Exhibit 9.4 Total U.S. Apple Production, by Percentage by Variety	29
Exhibit 9.5 Cash Receipts, United States Tree Fruit US\$1975 - 1998	30
Exhibit 9.6 Washington Tree Fruit Production & Prices 1988 -1997	31
Exhibit 9.7 Apple Variety and Percentage of Washington Production 1992 - 1998	31
Exhibit 9.8 Production of Apples, Major Competitors, Average 1979/81	32

Exhibit 9.9 Export Price for Fresh Apples, Selected Countries	32
Exhibit 9.10 Apples Production in Tons – By Province from 1926 – 1988	35
Exhibit 9.11 Value and Volume of Fresh Apple Export from Canada by Province (Crop Year)	35
Exhibit 11.1 Canadian Per Capita Consumption of Fresh Apples, 1960 – 1998	39
Exhibit 11.2 Canadian Per Capita Consumption of Fresh Tree Fruits	39
Exhibit 11.3 Estimated Per Capita Consumption, kilograms per capita 1990 - 1998 estimate	39
Exhibit 11.4 Per Capita Disappearance of Fresh Apples, 1990, 1994 – 1997 (kg/capita)	40
Exhibit 11.5 Top Ten Apple Producing Countries by Volume, 1998	40
Exhibit 11.6 Apple Production by Province by Volume and Value, Canada	41
Exhibit 11.7 Top Ten Fresh Apple Exporters & Importers by Volume & Value 1997	42
Exhibit 11.8 Value and Volume of Fresh Apple Export from Canada by Province (Crop Year)	42
Exhibit 11.9 British Columbia Exports of Fresh Apples by Country 1996 – 1998	43
Exhibit 11.10 B.C. Exports of Fresh Apples by Country (Value in Can\$)	43
Exhibit 11.11 B.C. Exports of Fresh Apple by Country (Volume in Kg)	43
Exhibit 11.12 Canadian Exports of Fresh Apples by Country 1996 – 1998	44
Exhibit 11.13 Canadian Exports of Fresh Apples by Country 1996 – 1998 (Value in Can\$)	44
Exhibit 11.14 Canadian Exports of Fresh Apples by Country 1996 – 1998 (Volume in kg)	44
Exhibit 11.15 Canada and British Columbia Total Production, Export and Import Values, Fresh Apples by Country	45
Exhibit 11.16 Apple Imports to Canada from the US by Variety 1994 – 1998	45
Exhibit 11.17 Canadian Imports of Fresh Apples by Country 1996 – 1998	45
Exhibit 11.18 Canadian Imports of Fresh Apples by Country 1998 Percentage	46

Appendices

Appendix I References	51
-----------------------	----

1. Introduction

This report develops a market profile of the B.C. tree fruit industry. It is one of four reports that have been prepared as background material for upcoming consultations with the industry. The objectives of the report were to:

- identify existing reports and other documents that describe and analyze the industry's market profile
- identify additional available resources (databases, key informants etc.) in order to provide additional pertinent information that would inform participants in the consultations, and;
- identify areas in need of further research.

This document provides the full report of the research project.

2. Methodology

Data collection for this study focused on two primary sources:

- Secondary data and publications including industry specific reports, government agency databases (e.g., Statistics Canada), web data and sites, current news articles, journals, databases from both Canadian, United States and world sources.
- Key industry experts from the Canada, United States and British Columbia tree fruit sector including producers, university and extension specialists, provincial specialists, farm business management staff, and agribusiness professionals.

3. Organization Of This Report

This report examines trends in market prices of competing jurisdictions and price trends in B.C. at various levels in the two sections following this. Attention is then focussed in the next section on market demands and consumer preference trends both in Canada and in export markets. Trends in product development and promotion are considered in Section 7. Sections 8 and 9 provide an overview of key markets for B.C. Tree Fruits and of existing and potential competitors in the region's key markets respectively. Marketing distribution channels in B.C. and elsewhere are reviewed in the section following this, global tree fruit marketing-related data in Section 11, and issues related to the B.C. marketing board concept in Section 12. The report concludes with a review of global tree fruit marketing data and recommendations for further research.

4. Trends In Market Prices Of Competing Jurisdictions

The international tree fruit sector is a strongly competitive industry with a large number of countries competing globally on the basis of price and quality within a relatively small number of tree fruit varieties. Overall, world market price is primarily dependent on the annual (and increasing) supply and the consumer demand of a specific variety. However, factors such as market access trade alliances, product quality, uniqueness of variety features, and market support functions (e.g., shipping and handling) will often figure prominently in the volume and price of trade. Since 1996 to the current year there has been a downward trend in average apples prices with specific varieties trending down at different rates. This trend is due to factors such as increased world supply, spread of currency values, sluggish demand in developed countries, economic problems in developing countries, and the financial problems in Asia. Exhibit 4.1 provides the average price of the top ten fresh apple export and import countries. This data indicates a strong variation of prices between exporting countries. As noted above, price differences such as the one between New Zealand (US\$820.55) and the United States (US\$617.90) may be due to premium received for a specific variety, advantages of early market access, trade alliances, quality of product, and market support provided.

Exhibit 4.1 Average Prices of Top Ten Fresh Apple Exporting & Importing Countries, 1997

(US\$/metric tonne)

Exporting Country		Importers Country	
France	649.42	Germany	577.90
United States	617.90	U.K.	976.71
Italy	533.43	Russian Fed.	467.80
Chile	460.72	Belg-Lux	797.03
Netherlands	618.36	Netherlands	615.78
New Zealand	820.55	Australia	166.65
Belg-Lux	736.76	U.S.	644.69
Argentina	561.87	China (incl Taiwan)	721.13
South Africa	513.63	Saudi Arabia	372.87
Poland	188.21	Brazil	571.55

Source: World Apple Outlook, Belrose Inc., Desmond O'Rourke.

The average price received by Canada and B.C. for apple exports in 1997 was calculated and provided in Exhibit 4.2. In 1997, Canada and British Columbia obtained US\$444.42 and US\$550.50 per metric tonne respectively. In comparison to the top exporters of apples, the value received by B.C. is close to the countries of Argentina, South Africa, and Italy. Again this price difference from other export countries would generally be a result of a difference in the variety, quality, market access, and trade alliance associated with tree fruits exported by Canada and British Columbia.

Exhibit 4.2 Average Prices of Canada & British Columbia for Apple Exports, 1997

(CDN\$ and US\$ per metric ton)

Canada	1997
Cdn Export Volume(metric tonne)	88,190.08
Cdn Export Value (Cdn\$)	54,254,200.00
Average Price of Export (CDN \$ per Metric Tonne)	615.20
Average Price of Export (US \$ per Metric Tonne)*	444.42

British Columbia	1997
BC Volume(metric tonne)	44,407.00
BC Value (Cdn\$)	33,845,177
Average Price of Export (CDN \$ per Metric Tonne)	762.16
Average Price of Export (US \$ per Metric Tonne)*	550.59

Source: Statistics Canada

The major competing jurisdictions for British Columbia would include the countries of New Zealand, South Africa, Chile, Argentina, and the United States (primarily Washington State). Prices over time for these countries and Washington State are provided in Exhibits 4.3, 4.4, 4.5 and 4.6. In Exhibit 4.3, note the higher price level obtained by the New Zealand apples due to strong variety, market development, and quality characteristics.

Exhibit 4.3 Export Prices for Fresh Apples, Selected Countries (US\$/metric tonne)

	1990-91	1991-92	1992-93	1993-94	1994-95	1995-96	1996-97	1997-98 Estimate
South Africa	680	521	275	589	459	558	554	514
Chile	392	451	365	402	456	569	533	461
Argentina	434	546	506	482	564	564	562	562
New Zealand	845	862	822	904	1058	996	937	821

Source: Betrose Inc., World Apple Review 1999 edition.

Exhibit 4.4 Export Prices for Fresh Apples, Selected Countries (US cents/lb)

	1990-91	1991-92	1992-93	1993-94	1994-95	1995-96	1996-97	1997-98 Estimate
South Africa	30.9	23.7	12.5	26.8	20.9	25.4	25.2	23.4
Chile	17.8	20.5	16.6	18.3	20.7	25.9	24.2	21
Argentina	19.7	24.8	23	21.9	25.6	25.6	25.5	25.5
New Zealand	38.4	39.2	37.4	41.1	48.1	45.3	42.6	37.3

Source: Betrose Inc., World Apple Review 1999 edition.

Exhibit 4.5 Average price received by United States Growers (US cents/pound)

	1996	1997	1998
Apples	15.9	15.4	12.3
Bartlett Pears	15.2	13.4	13.7
Prunes & Plums	22.1	13.7	15.6
Peaches	19.1	17.7	18.9

	1996	1997	1998
Apricots and Nectarines	23.7	18.8	23.6
Sweet Cherries	73.5	62.5	54.5
Tart Cherries	16.1	15.9	14.3

Source: USDA Economic Research Service. Fruit and Tree Nuts. World Agricultural Outlook Board, <http://usda.mannlib.cornell.edu> October 25, 1999.

Exhibit 4.6 Washington Tree Fruit Average Price US \$/Ton 1988- 1997

	Marketing Year	Avg. Price
APPLES		\$/Ton
	1988	260
	1989	186
	1990	328
	1991	440
	1992	308
	1993	284
	1994	276
	1995	430
	1996	332
	1997	328
SWEET CHERRIES	1988	983
	1989	802
	1990	1,180
	1991	1,200
	1992	871
	1993	1,240
	1994	1,200
	1995	1,520
	1996	1,780
	1997	1,430
BARTLETT PEARS	1988	244
	1989	258
	1990	248
	1991	270
	1992	272
	1993	269
	1994	226
	1995	230
	1996	376
	1997	262

Source: USDA, Washington Agricultural Statistics

4.1 Variety and Trends in Market Prices of Competing Jurisdictions

Overall, the price of a variety appears to be primarily influenced by the level of supply of that specific variety and to a lesser degree from the supply of similar varieties. As production volume of a variety increases the price of that variety will tend to trend downward regardless of its unique features.

Exhibit 4.7 Average Price Per Pound by Year Apples by Variety

	1993	1994	1995	1996	1997	1998	% Change from 1993 to 1998
Gala	52.9	54.7	65.4	53.1	34.1	32.5	50.3%
Fuji	56.1	54	58.4	47.2	23.7	25.9	55.7%
Jonagold	38.2	18.7	28.1	29.7	17.3	17.6	37.4%

Source: Okanagan Valley Tree Fruit Authority, (June 1999). Replanting for the Future, Tree Fruit Yield and Price Survey, Final Report.

Exhibit 4.7 provides data regarding the strong downward trend in the average price per pound of Gala, Fuji and Jonagold since 1993.² Exhibits 4.8, 4.9, 4.10 and 4.11 provide the variety and percentage of production for world, United States, Washington and British Columbia.

Exhibit 4.8 Variety and Percentage of World Production, 1992 -1997

	1992	1997
Red Delicious	20.5	18.8
Golden Delicious	17.5	14.8
Fuji/Gala/Braeburn/Jonagold	9.0	15.4
Total	47.0	49.0

Source: O'Rourke, D.

Exhibit 4.9 Variety and Percentage of Washington Production, 1992 -1998

	1992	1997	1998
Red Delicious	68.4	54.1	44.8
Golden Delicious	15	15.2	12.9
Fuji/Gala/Braeburn/Jonagold	5.6	20.1	26.1
Total	89.0	89.4	83.8

Source: O'Rourke, D. Summary Topics, IMPACT Center, Washington State University <http://impact.wsu.edu>

Exhibit 4.10 Variety and Percentage of British Columbia Production, 1994 - 1997

APPLES*	1994	1995	1996	1997
McIntosh	28.34%	33.12%	28.27%	26.72%
Spartan	15.81%	18.09%	14.54%	18.87%
Red Delicious	35.86%	30.22%	30.69%	31.38%
Golden Delicious	11.32%	9.95%	10.42%	10.28%
Jonagold	1.38%	1.36%	1.51%	1.51%
Fuji/Gala	3.27%	4.51%	6.41%	8.15%
TOTAL APPLES	95.98%	95.24%	91.83%	94.91%

Exhibit 4.11 Variety and Percentage of United States Production, 1992 -1997

	1992	1997	1998
Red Delicious	43.5	38.8	33.6
Golden Delicious	14.8	14.3	11.5
Fuji/Gala/Braeburn/Jonagold	4.0	13.2	17.7
Total	62.3	66.3	62.8

Source: O'Rourke, D. Summary Topics, IMPACT Center, Washington State University <http://impact.wsu.edu>

As the volume of each of the varieties of Jonagold, Fuji, and Gala increases, the price level decreases. The relationship between the price premium of a variety and the volume is an important consideration in context of the estimated number of new planting of Gala, Fuji and Jonagold varieties globally. The price of these three varieties are trending downward with the total volume increasing but still relatively low in comparison to the Red and Gold Delicious in the U.S. and B.C. Research from the IMPACT Centre at Washington State University (based on Washington data regarding new plantings) suggests that price premiums for the Jonagold, Fuji, and Gala varieties may still be available for a two-to-three year period of time. The study also suggests the demand for Delicious, Golden Delicious and Granny Smith has

² Okanagan Valley Tree Fruit Authority, (June 1999). Replanting for the Future, Tree Fruit Yield and Price Survey, Final Report.

remained relatively stable and thus any cutback in production could lead to higher prices. Therefore, it may be possible that between now and 2005, in some years, Red Delicious, Golden Delicious and Granny Smith could receive higher prices than Fuji, Gala or Braeburn. Note, analysis to determine the variety-price level required by growers in comparison to industry potential would be beneficial to growers

Exhibit 4.12 provides price forecasts for the year 2005 as follows: Fuji, \$9.72, Gala \$9.72, Braeburn \$7.13 and Jonagold \$6.8 in units of US\$ per 42 pound box. The IMPACT Centre has developed the forecasted prices noted as part of a study at the Washington State University. These price forecasts are based upon the effect of the Washington acreage, volume and variety plantings of the year 1995/97. The level of these forecasted variety prices supports the relationship of price and volume per variety as noted above. In contrast this study predicted that Red Delicious, Golden Delicious and Granny Smith prices will trend downward to the year 2005 but at a slower rate than the varieties of Fuji, Gala, Braeburn and Jonagold.

Other variety and price issues revealed from various IMPACT Center's research studies include:

- Niches for new varieties (e.g., Pink Lady) are likely to be crowded and available price premium short than past varieties
- Demand for Red Delicious is on a downward trend whereas the demand for Gala, Fuji and Braeburn and Jonagold will continue to be strong.³ Even with this level of demand, there may be a strong downward trend to the price levels for these varieties over the next 5 to 7 years based on larger industry players entering these varieties as producers, more intense competition with export markets and new entrant to these varieties.
- Few price niches are available in the world apple market, leaving growers to focus on growing to their strengths and not just focus on new varieties while packers & growers need to retain a mix of mature and newer varieties.^{4 5}
- A shift has occurred towards the newer varieties and away from Red Delicious and other traditional varieties. However, one must look closely at the grower returns in the short and long term to justify the investment into newer varieties such as the Fuji. New varieties do not necessarily mean they are better for the grower. Growers must be encouraged to grow the variety that is their strength based upon their production, financial and marketing factors.
- A cannibalization of reds (apples) may be occurring. The term refers to the idea that the total amount of apples sold is not greater as new varieties come on-stream but that the actual result is less red apples and more new varieties being sold. Thus, the end result for growers is selling a

Exhibit 4.12 F.O.B. Prices of Washington Fresh Apples Actual and Projected Based at Average Yields and 1995 Prices.*

Variety	Actual 1995-1996 ³	Projected (1995 prices)	
		2000	2005
		\$/42 lb box	
Red Delicious	14.92	16.98	18.9
Golden Delicious	15.45	19.64	22.3
Granny Smith	18.47	17.94	16.34
Gala	25.29	14.26	9.72
Fuji	29.53	11.34	9.72
Braeburn	21.09	8.91	7.13
Rome	15.92	18.46	17.84
Jonagold	20.5	10.37	6.8

Source: O'Rourke, D. (March 1997) Trends in Production, Utilization, and Price of Washington Apples to 2005, IMPACT Center, Information Series #90

³ O'Rourke, D. (March 1997). Balancing Supply and Demand, IMPACT Center. <http://impact.wsu.edu/Slides/October 27, 1999>.

⁴ O'Rourke, D. (1997). World Apple Variety Outlook through the year 2005. IMPACT Center, Washington State University.

^{5 5} Good Fruit Grower. (April 1998). Is Red Delicious dying or is it being reborn? IMPACT centre <http://www.goodfruit.com> November 3, 1999.

new variety at the same volume level and obtaining an increase of return if a premium is paid for that new variety.⁶

5. Price Trends For B.C. Tree Fruit

5.1 Wholesale

Variety and Grade

Sources of Price Information

Agriculture and Agri-Food Canada provides a service called InfoHort which presents regularly collected market information for horticultural commodities on a commodity, grade and variety basis. InfoHort provides the wholesale to retail prices (weekly and daily) for 12 cities in Canada including Calgary, Edmonton, Halifax, Moncton, Montreal, Ottawa, Regina, Saskatoon, St John's Nfld., Toronto, Vancouver, and Winnipeg. As noted in Exhibit 5.1, InfoHort provides the commodity, origin, variety, weight, grade, low price and high price for the week (or day on request) of the shipment to a specific city.

⁶ O'Rourke, Desmond. Professor of Agricultural Economics and Director IMPACT Center at Washington State University, Pullman Washington. (November 1, 1999) Personal Interview, phone.

Exhibit 5.1 Fresh Apple: Weekly Wholesale to Retail Market Prices – Vancouver, October 24, 1999

COMMODITY	ORIGIN	VARIETY	WEIGHT	GRADE	LOW	HIGH
Apples	NZ	Braeburn	T/P 100	-	44	44
Apples	NZ	Braeburn	T/P 100	FCY	38	38
Apples	NZ	Braeburn	T/P 110	FCY	34.5	34.5
Apples	NZ	Royal Gala	T/P 110	FCY	38	38
Apples	NZ	Royal Gala	T/P 120	-	39	39
Apples	UWA	Braeburn	T/P 56	XFCY	16.5	16.5
Apples	UWA	Braeburn	T/P 72	XFCY	16.5	16.5
Apples	UWA	C.A. Golden Delicious	T/P 100	XFCY	17.75	26.5
Apples	UWA	C.A. Golden Delicious	T/P 113	XFCY	26.5	26.5
Apples	UWA	C.A. Golden Delicious	T/P 64	XFCY	15.5	15.5
Apples	UWA	C.A. Golden Delicious	T/P 88	XFCY	17.75	17.75
Apples	UWA	C.A. Granny Smith	T/P 100	XFCY	21.5	23.5
Apples	UWA	C.A. Granny Smith	T/P 113	XFCY	21.5	23.5
Apples	UWA	C.A. Granny Smith	T/P 88	XFCY	25	25
Apples	UWA	C.A. Red Delicious	T/P 100	XFCY	18	20
Apples	UWA	C.A. Red Delicious	T/P 113	XFCY	18	18
Apples	UWA	C.A. Red Delicious	T/P 72	XFCY	15.75	16.5
Apples	UWA	C.A. Red Delicious	T/P 64	XFCY	16.5	16.5
Apples	UWA	CA Red Rome	T/P 88	XFCY	28	28
Apples	UWA	Fuji	T/P 100	XFCY	30	30
Apples	UWA	Golden Delicious	T/P 56	FCY	14.5	14.5
Apples	UWA	Golden Delicious	T/P 56	XFCY	14.5	14.5
Apples	UWA	Golden Delicious	T/P 72	FCY	14.5	14.5
Apples	UWA	Golden Delicious	T/P 72	XFCY	14.5	14.5
Apples	UWA	Golden Delicious	T/P 88	XFCY	16	16
Apples	UWA	Granny Smith	T/P 100	XFCY	24.75	24.75
Apples	UWA	Red Delicious	T/P 64	PREM	13.25	13.25

*Prices are in Canadian \$

**Source: Agriculture and Agri-Food Canada, InfoHort

⁷InfoHort also provides volume, origin, and destination by commodity for provincial imports⁸ and domestic exports⁹ (e.g., B.C. to other Canadian provinces). The historical data for InfoHort is currently being placed within a searchable online database structure making past and current data more easily accessible. The historical database should be available December 1999.¹⁰ Currently the data is not available in a summary form making it difficult to track prices over time. Therefore, although the information is detailed and readily available it may be beneficial to the producers and channel members to have this information collected and organized by a central agency and presented in a format that would be of greater benefit to producers (e.g., comparing grower returns to wholesale prices).

⁷ Agriculture and Agri-Food Canada, InfoHort. http://aceis.agr.ca/misb/infhort/infhort_e.html October 24, 1999.

⁸ Agriculture and Agri-Food Canada, Infohort. , Imports by Province.

<http://www.agr.ca/misb/infhort/data/snapback/english/10-18-99snapback00.html>

⁹ Agriculture and Agri-Food Canada, Infohort. Domestic Weekly Arrivals.

<http://www.agr.ca/misb/infhort/data/unloads/english/07-06-98unloads00.html>

¹⁰ Personal Interview, Doug Peters, Agriculture and Agri-Food Canada, Ottawa, Ontario. November 1, 1999.

In the United States, the California Tree Fruit Agreement (a domestic and export marketing agency) provides a bi-weekly newsletter detailing size, grade, wholesale, and retail price information for each variety of product sold that week. The newsletter also provides season packouts, market situation, current sales activities, shipping problems and promotion information for each export destination.¹¹

Market Channel

Price information for each market channel (e.g., independent versus cooperative packer) at the wholesale level is not readily available. However, this competitive information may be available from packinghouses.

5.2 Retail

Variety, Grade and Market Channel

Statistics Canada does collect monthly average retail prices for apples as noted in Exhibit 5.2. Canadian retail prices for soft tree fruits, as well as any tree fruit variety and grades are not readily available. This price per variety and/or grade if collected and summarized may be beneficial to producers and packinghouses in assisting them in making market decisions.

Exhibit 5.2 Average Monthly Retail Prices, Fresh Apples (CDN \$) per 1 Kilogram

	Jan.	Feb.	Mar	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1995	2.08	2.11	2.21	2.22	2.24	2.27	2.37	2.44	2.4	2.12	1.97	2.12
1996	2.19	2.26	2.28	2.24	2.28	2.35	2.41	2.66	2.63	2.35	2.19	2.21
1997	2.26	2.25	2.18	2.22	2.16	2.23	2.34	2.34	2.36	2.17	2.24	2.25
1998	2.28	2.28	2.33	2.28	2.38	2.48	2.49	2.47	2.5	2.31	2.29	2.21
1999	2.31	2.23	2.38	2.34	2.41	2.49	2.57	2.61	2.55	n/a	n/a	n/a

Source: Statistics Canada

In the United States, the Bureau of Labor Statistics tracks the U.S. monthly and annual retail prices for selected fruit, juices and fruit varieties and publishes them in monthly and annual USDA Fruit and Nut Survey. Exhibit 5.3 presented the retail prices for Red Delicious apples, peaches, and Anjou pears from 1980 to 1998.¹²

¹¹ California Tree Fruit Agreement, bi-weekly report <http://caltreefruit.com/interntl/99BiweeklyNo3.htm> November 4, 1999.

¹² USDA. (1998). Fruit and Nut Yearbook. <http://usda.mannlib.cornell.edu/data-sets/specialty/80922/> November 1, 1999.

Exhibit 5.3 Annual Average Retail Prices for Selected Fresh Fruit, United States, 1980 – 1998.

(US\$/lb.)

Year	Red Delicious Apples	Anjou Pears
1980	0.629	0.609
1981	0.565	0.590
1982	0.639	0.606
1983	0.590	0.619
1984	0.657	0.541
1985	0.685	0.703
1986	0.773	0.768
1987	0.728	0.745
1988	0.729	0.628
1989	0.688	0.728
1990	0.719	0.759
1991	0.885	0.827
1992	0.890	0.837
1993	0.834	0.846
1994	0.803	0.802
1995	0.835	0.774
1996	0.930	0.916
1997	0.907	0.985
1998	0.943	1.089

Source: Bureau of Labor Statistics, Department of Labor.

5.3 Farm Level

Variety

Exhibit 5.4 and Exhibit 5.5 present the weighted prices by variety based on the BCMAF annual horticultural statistics. Note that the term fresh wholesale refers to all producer sales to wholesalers. Wholesalers in this case includes agency channels and packinghouse direct sales with sales being recorded at the point of production. Overall, there appears to be a general flat or downward trend of prices in each variety of apples and pears. Exhibit 5.4 indicates that there is a strong price difference between specific varieties of apples and pears. Note that growers may still have be experiencing reasonable returns if they are producing varieties of higher prices even if the price trends are downward. Greater historical and current year information would provide a stronger view of the actual variety price trend. This longer-term price per variety information would be beneficial information to track and provide to producers and nurseries for use in their farm business planning decisions.

Exhibit 5.4 Apple Fresh Wholesale Prices By Variety, Okanagan-Similkameen-Kootenay – 1994 - 1997

	in \$/lb			
APPLES	1994	1995	1996	1997
Summer Apples	0.27	0.29	0.26	0.30
Tydemans Red	0.15	0.14	0.00	0.00
McIntosh	0.16	0.16	0.15	0.18
Spartan	0.18	0.24	0.18	0.21
Red Delicious	0.13	0.22	0.15	0.15
Golden Delicious	0.16	0.24	0.15	0.15
Rome Beauty	0.10	0.19	0.18	0.17
Newton	0.07	0.18	0.14	0.22
Granny Smith	0.25	0.34	0.24	0.29
Jonagold	0.26	0.34	0.32	0.19
Gala	0.55	0.64	0.49	0.43
Empire	0.17	0.20	0.19	0.13
Fuji	0.50	0.58	0.43	0.22
Other Apples	0.30	0.27	0.24	0.30

Source: BCMAF Horticultural Statistics 1994 to 1997

*Fresh wholesale includes agency channels and packinghouse direct sales. Sales are recorded at the point of production.

Exhibit 5.5 Pears Fresh Wholesale Price by Variety, Okanagan-Similkameen-Kootenay – 1994 - 1997

	in \$/lb			
PEARS	1994	1995	1996	1997
Bartlett	0.24	0.22	0.30	0.13
D'Anjou	0.24	0.19	0.29	0.15
Other Pears	0.28	0.24	0.29	0.26

*Fresh wholesale includes agency channels and packinghouse direct sales. Sales are recorded at the point of production.

*Fresh wholesale includes agency channels and packinghouse direct sales. Sales are recorded at the point of production.

Exhibit 5.6 provides the average fresh wholesale price for each of the BC tree fruit. The information allows for a general interpretation of trend as downward and/or level in all products.

Exhibit 5.6 Tree Fruit Fresh Wholesale prices, British Columbia - 1994 - 1997

(CAN\$/lb.)

	in \$/lb			
	1994	1995	1996	1997
Apples	0.17	0.23	0.19	0.19
Crabapples	0.90	0.83	0.69	0.81
Pears	0.24	0.21	0.29	0.14
Peaches	0.24	0.29	0.39	0.32

	in \$/lb			
	1994	1995	1996	1997
Apricots	0.26	0.33	0.68	0.41
Cherries, Sweet	0.85	1.38	1.16	1.11
Cherries, Sour	0.38	0.00	0.10	0.07
Prunes	0.11	0.22	0.32	0.24
Plums	0.38	0.38	0.50	0.47
Nectarines	0.55	0.60	0.51	0.57

*Fresh wholesale includes agency channels and packinghouse direct sales. Sales are recorded at the point of production.

As part of the factors affecting the price it is beneficial to view the trends of production and sales as noted in Exhibit 5.7.

Exhibit 5.7 Tree Fruit Production, B.C. 1994 -1997

COMMODITY	TOTAL SALES 1994		TOTAL SALES 1995		TOTAL SALES 1996		TOTAL SALES 1997	
	QUANTITY	VALUE	QUANTITY	VALUE	QUANTITY	VALUE	QUANTITY	VALUE
Apples	417,942	51,367	350,148	75,001	332,985	49,485	269,238	32,397
Crabapples	123	110	100	83	1,043	721	82	65
Pears	13,420	2,647	16,831	3,473	12,382	3,644	17,777	2,495
Peaches	13,219	3,205	12,633	3,597	10,934	4,289	9,782	3,150
Apricots	2,849	741	3,003	994	1,875	1,275	1,567	643
Cherries - Sweet	9,250	7,729	7,289	9,798	4,778	5,542	4,850	5,384
Cherries - Sour	2,766	322	2,212	204	1,494	149	947	66
Prunes	2,522	282	1,897	412	1,530	492	1,619	391
Plums	189	74	234	89	221	129	84	59
Nectarines	592	325	1,000	601	1,370	699	1,605	915
TOTAL BC	462,872	66,803	395,347	94,252	368,612	66,425	307,551	45,564

*Includes agency channels, roadside stand sales, direct farm sales and packinghouse direct sales. Sales are recorded at the point of production.

Source: BCMAF Horticultural Statistics 1994 to 1997.

Exhibit 5.8 provides the total cash receipts from apples (as a related step to the price) for each province and Canada. BC apple cash receipts makes up a strong part of the total cash receipts from apples in Canada.

Exhibit 5.8 Total Cash Receipts (\$) from Farm Products – Apples by Province and Canada, 1971-1998

YEAR	CANADA	NEW BRUNSWICK	NOVA SCOTIA	QUEBEC	BRITISH COLUMBIA	ONTARIO
1971	27,729	457	2,244	6,257	9,602	9,169
1972	35,409	715	3,056	9,522	10,792	11,324
1973	60,696	780	5,569	17,602	17,998	18,747
1974	55,051	612	4,482	12,030	17,128	20,799
1975	36,839	651	2,036	9,382	9,616	15,154

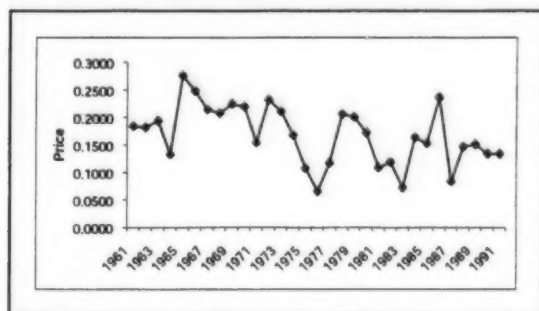
YEAR	CANADA	NEW BRUNSWICK	NOVA SCOTIA	QUEBEC	BRITISH COLUMBIA	ONTARIO
1976	53,897	784	4,369	9,611	16,075	23,058
1977	65,055	722	5,257	8,762	23,644	26,670
1978	82,888	836	6,072	13,800	30,211	31,969
1979	95,226	999	7,185	19,725	33,681	33,636
1980	90,618	982	7,188	19,474	31,823	31,151
1981	97,561	1,352	9,678	15,839	36,367	34,325
1982	92,261	1,174	7,176	15,037	32,675	36,199
1983	91,837	1,467	8,124	17,510	27,916	36,820
1984	93,302	676	9,322	17,867	28,400	37,037
1985	103,485	1,864	9,226	21,954	28,321	42,120
1986	117,224	2,958	9,723	21,204	35,276	48,063
1987	109,476	2,246	9,693	17,734	31,721	48,082
1988	114,131	1,848	11,482	19,245	33,733	47,823
1989	114,511	1,595	10,255	22,829	35,574	44,258
1990	131,895	2,114	10,247	24,232	38,228	57,074
1991	149,187	2,733	10,928	27,935	46,628	60,963
1992	144,681	2,442	10,264	30,738	52,366	48,825
1993	137,528	2,207	9,506	27,327	47,162	51,275
1994	143,898	1,791	9,415	28,078	49,394	55,120
1995	184,149	1,943	10,598	30,763	66,847	73,878
1996	186,586	2,287	11,832	30,410	61,340	80,352
1997	179,108	2,000	13,160	25,104	47,616	90,951
1998	165,221	2,102	13,140	24,788	48,177	76,714

Source: Statistics Canada

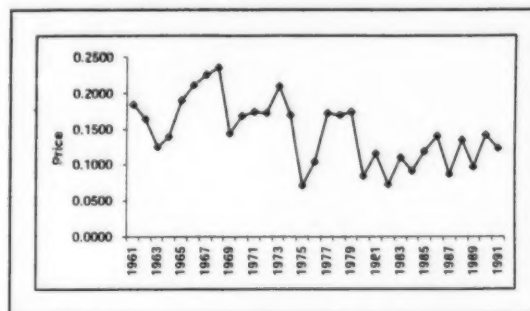
Exhibit 5.9 and Exhibit 5.10 provide the British Columbia prices of tree fruits based on long term from Statistics Canada. This type of data would be beneficial to producers to determine the bigger picture of long-term price trends.

Exhibit 5.9 indicates a general downward trend. Exhibit 5.10 presents apples prices that appear to show large swings in prices and are on a general downward trend

**Exhibit 5.9 BC Pear Prices – Fresh Wholesale
(1961 – 1991)**



**Exhibit 5.10 BC Apple Prices – Fresh Wholesale
(1961 – 1991)**



Source: Statistics Canada

Grade

Prices for specific grades at the farm level are not readily available from secondary sources. However, this information may be of strong benefit to producers as it would allow them to determine the premium provided by the market for quality. It may be beneficial to collect this price-grade information from packinghouses, aggregate data and then present it in a summary form to producers and packers to incorporate into their business decisions.

Market Channel

Market channel information (in terms of packinghouse prices) is not readily available from secondary sources for producers.

6. Trends In Market Demand/Consumer Preferences For Tree fruit

Overall, consumers appear to be moving away from the more traditional varieties and enjoying access to a range of apple varieties year round. Gala, Fuji, Braeburn and Jonagold are varieties experiencing growth in demand whereas the Red Delicious and Granny Smith varieties are experiencing a slowdown of demand (e.g., declining share of the total apple market). These trends are apparent based on the utilization of the product and studies on the relation of consumer taste and tree fruit variety.

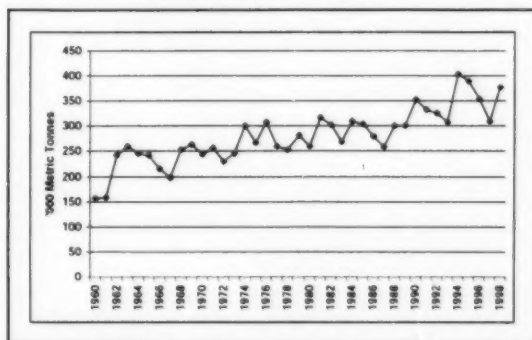
6.1 In Canada

The 1998 per capita fruit consumption for Canadians increased to approximately 121 kg, up from about 111 kg in 1990. The consumption of fruit juices such as apple, orange and grapefruit contributed to this increase in total fruit consumption. Canada's favourite fruit is the banana, of which each person ate almost 14 kg in 1998, followed by apples at 12 kg per person and oranges (including mandarins and clementines) at 10 kg.

The market demand for the volume of fresh product can track fresh tree fruits consumed in Canada each year. Overall, as noted in Exhibit 6.1, the total volume of fresh apples consumed in Canada has been increasing since 1960.

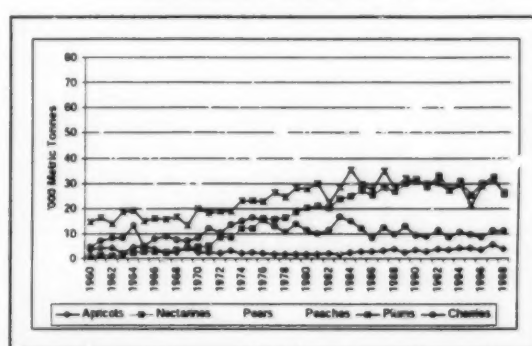
Exhibit 6.2, indicates the volume of fresh tree fruit consumption with the exception of cherries and apricots has been increasing.

Exhibit 6.1 Volume of Fresh Apples Consumed in Canada, 1960 – 1998



Source: Statistics Canada

Exhibit 6.2 Volume of Various Fresh Fruits Consumed in Canada, 1960 – 1998



Source: Statistics Canada

¹³ Consumer preferences issues for tree fruit (specific to Canada) collected through this study include:

- Volume consumption and per capita consumption is generally increasing over time.
- The Pacific Agri-Food Research Centre (PARC) in Summerland in its use of a formal taste panels to assist in variety selection has determined that new cultivars must equal or exceed appearance, texture, and flavor rating of standard cultivars as well as meet production requirements. A taste

¹³ Statistics Canada, The Daily, Wednesday, October 20, 1999.

<http://www.statcan.ca/Daily/English/991020/d991020c.htm> November 10, 1999

panel of 150 consumer indicated the preference of new cultivars, Creston and Silken over Royal Gala in terms of flavor and texture but not in appearance.¹⁴¹⁵

- In 1997, the Pacific Agri-Food Research Centre (PARC) conducted research to identify characteristics of the ideal pear. Sensory and consumer panels were conducted over a number of years. The best pear was determined to be 6 to 7.5 cm fruit diameter, bright yellow ground colour with no or little blush, shape of a typical well grown Bartlett, and a sweetness level of about 14% acceptable soluble solids.¹⁶
- Greg Gauthier, general manager B.C. Tree Fruits Ltd., indicated at a presentation at the B.C. Fruit Growers' Association Horticultural Forum that the large number of varieties in the market has made retailers look for a unique and better apple that stands out from the crowd and that they can make money on. Also, McIntosh and Granny Smith were viewed as varieties declining in popularity basis flavor and handling issues while the Gala, Fuji and Braeburn as varieties that will continue to be popular but with downward price pressures.¹⁷

6.2 In Export Markets

¹⁸Consumer preference issues for tree fruit collected through this study include:

- Based on research by Dr. Bruce Barritt at the Washington State University Tree Fruit Research and Extension Center, consumers want an apple of high quality (e.g., not mushy or dry), better shelf life, uniform size and want that product year round. Consumers also appear to enjoy the wider range of varieties available, are less concerned with appearance characteristics and more concerned with inner qualities of the apple. The research encourages Washington orchardists to move away from the Delicious and McIntosh varieties (even though they do a good job at producing these apples) to products more suited to the consumer preferences.¹⁹
- The IMPACT Center at Washington State University conducts an annual survey of North American retailers. Retailers' 1999 stocking plans are as follows:
 - decrease Red Delicious stock by 14%
 - increase Gala stock by 68%
 - increase Fuji stock by 55%
 - increase Braeburn stock by 59%
 - increase Jonagold stock by 41%.
- There is a movement from consumers and thus through to retailers and wholesalers towards the novel or newer varieties and the stocking of a year round quality apple.²⁰
- The Washington Apple Commission has made considerable effort to increase their knowledge of consumer preferences. Efforts include:

¹⁴ PARC. Better Taste for Apple Breeders. <http://res.agr.ca/summer> October 28, 1999.

¹⁵ Cliff, M., King, M., and Hampson, C. (1998) Comparison of Mean Scores and R-Indices for Consumer Preferences of Apple Cultivars. *HortScience* 33(7):1239-1240.

¹⁶ Kappel, F., Hogue, E., and Fisher-Fleming. (1997). The Best Pear is ...? PARC Summerland Station <http://res.agr.ca/summer> October 28, 1999.

¹⁷ Good Fruit Grower. (January 1997). Sweet apples may be the best bet, IMPACT centre <http://www.goodfruit.com> October 31, 1999.

¹⁸ Statistics Canada, The Daily. Wednesday, October 20, 1999.

<http://www.statcan.ca/Daily/English/991020/d991020c.htm> November 10, 1999

¹⁹ Barritt, B. (February 1999). Apple varieties and the consumer --adapting to change. Good Fruit Grower.

²⁰ Good Fruit Grower. (April 1998). Steve Lutz on ... Apple Commission. The pursuit of quality. IMPACT centre <http://www.goodfruit.com> October 31, 1999.

- A Washington Apple Commission survey indicated that many Washington shoppers are not getting the taste and crunch expected when they eat a Red Delicious apple. Surveys indicated that the dark red appearance of the apple suggested a good tasting apple while the actual apples was often mushy and bland. It was also noted that there was a strong relationship between consumer expectation being met and the repeat purchase decision.²¹
- Washington State has developed a methodology to evaluate consumer acceptance of new varieties of a product. The method recognizes the need to determine sensory attributes important to consumer and to develop effective marketing programs to match consumer taste. Preliminary research results indicated that price and color affect purchase decisions whereas texture and flavor affect consumer post-purchase evaluation and the likelihood of repeat purchase of apples. Fuji consistently ranked highest followed by Braeburn and Golden Delicious.²²
- The Washington Apple Commission provides the following variety preference information within the United States: US Northeast prefers tart apples such as the McIntosh, Granny Smith and Braeburn; Midwest prefers sweet apples such as the Red Delicious, and the Western prefers taste quality such as the Gala and Fuji. The Commission identifies apple crunch or firmness and flavor as the apple qualities important to consumer. Consumers indicated a low repurchase of that specific apple variety if it did not have that quality expected on the last purchase.²³
- The Commission will spend \$220,000 to sponsor a study of consumer attitudes and behaviors to develop a compelling message.²⁴
- A June 1998 publication quantitatively defined the relationship between select internal apple characteristics and prices within Japan. Wholesale prices for apples in Japan are associated with Brix, acid and juice content. The research shows that New Zealand and the US will need to increase the quality of the apple and decrease the price in order to gain market acceptance among Japanese consumers.²⁵

²¹ McNaughton, D. (March, 1999). Competitive apple market takes bit out of old favourites. *Ottawa Citizen*.

²² McCracken, V., Mair, B., Boylston, T., Worley, T. (1995). Development of a Scheme to Evaluate Consumer Apple Variety Preferences. IMPACT Center. <http://impact.wsu.edu> October 27, 1999.

²³ Good Fruit Grower. (April 1998). Steve Lutz on ... Apple Commission. The pursuit of quality. IMPACT Center <http://www.goodfruit.com> October 31, 1999.

²⁴ Hanse, M. (June 1998). Apple Commission mulls over assessment. *Good Fruit Grower*.

²⁵ Kajikawa, C. (May-June 1998). Quality Level and Price in the Japanese Apple Market, *Agribusiness*; 14(3), May-June 1998, pages 227-33.

7. Trends In Product Development And Promotion

7.1 Product Development

Product development within the tree fruit industry focuses on the following: variety research, production/orchard management issues, storage, handling and packing technologies, packaging, and adaptation or new products for the market. The following provides examples to some of the current product developments.

- In February 1999, the Australian company, Westernport Coolstores Pty Ltd, released a new fresh fruit snack product called "Snack Apple". The new product is a fresh food snack of peeled fruit chunks packaged for the school age market. The product is coated with preservative coating technology made from natural vegetable gum and will extend the shelf life of peeled fruit segments to 14 days. The research was supported by an Australian Industry Research and Development Board loan of \$189,164 to trial and commercialize edible coating technology for fresh apples. The target for this product is the Asia Pacific region with emphasis on Japan.²⁶
- ENZA has partnered with a manufacturer to develop a snack food product of red and green apple chunks packaged with caramel dip. The target for the product is school age children. The snack food is distributed under the name Cool Cuts and is part of a line of three healthy snack products which includes carrots with ranch dip and celery with peanut butter. A specially labeled Looney Tunes character Cool Cuts package is part of the ENZA sweepstake promotion.²⁷
- The New Zealand research organization HortResearch has focused research in adding value including: cutting drying times of cherries, plums, and nectarines through pre-treatment dippings; modified atmosphere heat pump to produce low moisture, low sulphur dioxide dried apricots for the health food markets; and technologies to reduce incidence of cherry cracking. Variety research includes fruit for the future such as low acid, crisp white fleshed peaches, peaches covering a range of harvest times, apricot cultivar "Vulcan" with large size, positive appearance and productivity characteristics and cherry development to allow fruit picked from ground level.²⁸
- Wilmot Orchards owners, Charles and Judi Stevens, chair the Durnham Study Group where apple growers, Ontario Ministry of Agriculture, Food and Rural Affairs and other farm managers exchange market and production related ideas at a producer club. Ideas regarding consumer preference, technologies, and management are exchanged.²⁹
- The Pacific Agri-Food Research Centre located in Summerland currently focuses on a range of product development issues relevant to the Canadian fruit industry. Specific research areas include: sweet cherry breeding (focusing on a product which will allow access of marketing niches, environmental adoption to both B.C. and Ontario, and reduced cost of production to growers); orchard management improved management systems, and apple breeding including the development and consumer testing of such apple cultivars such as Creston, Chinook, and Silken.³⁰

²⁶ Australian Industry Research and Development Board, Media Releases February 1999. <http://www.isr.gov.au> October 28, 1999.

²⁷ ENZA web site, News Stories. <http://enzafruit.com.nz> November 1, 1999

²⁸ HortResearch web site <http://hort.cri.nz/summerfruit.html> October 25, 1999.

²⁹ Canadian Farm Business Management Council. (July/August 1999). Collaboration, market research, risk management strategy drive success for orchard and blueberry business, Canadian Farm Manager.

³⁰ Pacific Agri-Food Research Centre. Summerland Station. Agriculture and Agri-Food Canada. <http://res.agr.ca/summer/horticulture/hampson.htm> November 1, 1999.

- There is increased interest in IFP or Integrated Fruit Production techniques that include the management of orchards with less input such as pesticides, fungicides, fertilizers and possibly irrigation. Currently New Zealand growers are being encouraged to adopt IFP to maintain access to European markets.³¹
- The ENZA (ENZA is not an acronym but a brand/company name of the marketing agency for New Zealand tree fruits) funded research project resulted in the development of a new type of packaging which incorporates a polyethylene terephthalate (PET) laminate. This material reduces the fruit weight loss by 20% and extends storage time by four to six weeks by preventing the shriveling of the fruit. A plastic shroud for pallets of bins was also developed with similar positive results. ENZA is trialing the packing of Cox and Braeburn using this PET material and bin shrouds.³²
- The USDA research within the fruit sector ranges from storage to varieties in soft fruits and apples. The Current Research Information Service (CRIS) database currently tracks projects in agriculture, food and nutrition, and forestry completed by USDA, land grant universities, and other related government and education institutions.³³
- The Inventory of Canadian Agri-Food Research (ICAR) is a database containing details of over 2,400 research projects in agriculture, food, human nutrition, aquaculture and biotechnology. A query of tree fruit related projects resulted in over 88 documents. The research projects were generally of a technical, orchard management and production focus as opposed to a marketing or management research database.³⁴
- ENZA, the New Zealand export marketing agency, has indicated that they are not planning involvement in the marketing of genetically modified fruit. Currently all pipfruit grown and exported from New Zealand has been developed using conventional methods.³⁵
- The Okanagan Plant Improvement Company (PICO) which is owned by the B.C. Fruit Growers Association focuses on research for the improvement and commercial development of fruit varieties. Pico operates a budwood scheme that provides wood for growers. PICO also allows growers to test new variety performance.
- The Okanagan Biotechnology Inc. is currently conducting research in the development of non-browning apples. The research is a collaboration between private and government partners.

7.2 Promotion

Recent promotion initiatives within the apple and tree fruit sector include the following:

British Columbia

- B.C. Tree Fruits Limited provides promotional information via their web site. Web site areas include: variety information, consumer-related information, Fruit News issues and wholesale account data for managers.³⁶

³¹ Good Fruit Grower. (October 1998). Hood River growers look for a competitive edge with IFP, IMPACT Center <http://www.goodfruit.com> October 31, 1999.

³² ENZA Web site, Current News Stories. <http://enza.co.nz> November 1, 1999 Computer Model results in solution to apple quality problem.

³³ CRIS web site. <http://cristel.nal.usda.gov:8080/USDA/CRIS> Home Page

³⁴ Inventory of Canadian Agri-Food Research (ICAR). <http://www.agr.ca/icare.html> November 3, 1999.

³⁵ ENZA Web site, Current News Stories. <http://enza.co.nz> November 1, 1999 Enza Distances it from Gene Engineering

³⁶ B.C. Tree Fruits Limited web site, <http://www.bc.tree.com> November 4, 1999.

- The province supports a Buy BC program which encourages the purchase of products produced in B.C.

Washington

- In August 1998 the Washington Apple Commission asked for an additional 15 cents per box over the current 25 cents grower assessment. The increase of assessment was voted in August 1998 and will be in place for three years. The funds (additional US\$16 million on the estimate of 107 box crop) are to be used for direct consumer advertising with the objective of increasing domestic consumption of apples.^{37,38} Preliminary results indicate sales of apples in test markets with commercials are higher than sales in markets with no advertising. The plan also includes encouraging retailers to put apple supplies at red-hot sale prices and lower everyday prices.
- In 1996-97 the Washington Apple Commission initiated a variety specific promotion targeting the Fuji apple and characteristics of sweet flavour, crisp texture, and attractive coloring. There was initially concern regarding the success of the effort because of year to year quality differences due to weather and the many growers providing the product. As well, apples are what is called experience goods so that consumers need to actually taste the apple to make a decision regarding preference towards the variety.³⁹
- The Washington Apple Commission is currently (November 1999) promoting apples health benefits through a coordinated promotion effort using the tagline "A Washington Apple a Day is the Healthy Way."⁴⁰
- The Washington Apple Commission promotion efforts include a very extensive web site providing consumer information, video clips from the "Apple Guy" promotions which supports the slogan "Washington Apples ... Just the Thing", kids corners, contests, sweepstakes and recipes.⁴¹ The domestic marketing/wholesale and retail section of the web site provides extensive marketing support information.⁴² The grower and shipper section of the web site presents reported activities, directories and shipment information, which are secured for industry personnel use only.⁴³
- The Washington Apple Commission has developed a fully integrated consumer education program and implemented the program in two test markets. The objective of the program is the increase sales of apples through education.⁴⁴
- The Washington Apple Commission will sponsor a \$ 225,000 study this year to find out what motivates people to eat apples and how they can be encouraged to eat more.⁴⁵

³⁷ Good Fruit Grower, Washington Apple Commission, Industry in Transition. <http://goodfruit.com/archive/June-99/feature6.html> November 1, 1999.

³⁸ Good Fruit Grower. (1998) Apple Growers to vote on 15c assessment hike.

³⁹ Richards, T. and Patterson, P. (1998). New Varieties and the Returns to Commodity Promotion: Washington Fuji Apples, American Journal of Agricultural Economics Conference Paper.

⁴⁰ Harvest Net. (1999). Health Benefits the theme of New Apple Promotion, November 12, 1999. <http://www/harvest.net>

⁴¹ Washington Apple Commission <http://www.bestapples.com/> November 11, 1999

⁴² Washington Apple Commission Industry Information <http://www.apples.org/> November 11, 1999.

⁴³ Washington Apple Commission Growers and Shippers <http://www.bestapples.com/growers-shippers/> November 10, 1999.

⁴⁴ Washington State Apple Commission. In-store research shows the more apples consumers know, the more apples they buy. http://www.apples.org/ad_wa_apples/report10.html November 11, 1999.

⁴⁵ Warner, G. (1998) New apple advertising strategy to be developed, Good Fruit Grower. (July 1999). <http://www.goodfruit.com/archive/Apr15-98/feature4.html> November 11, 1999.

- The Pacific Northwest cherry growers approved a \$1.4 million promotion budget for the purpose of promoting cherries on behalf of the producers of Idaho, Oregon, Washington, and Utah. Approximately 1/2 of the funds will target U.S. retailers using cooperative advertising. The balance of the funds will include retail tours, national cherry recipe, and a web site. The theme is promotion the "Fine art of Northwest Cherries" with a picture of the Mona Lisa holding a large red cherry. The Northwest Cherry Growers' export promotion budget is approximately \$2.25 million including U.S. \$1.025 million of federal funds from the Market Access Program. Funding will be shared with other Northwest products and placed towards promotions in the countries of Taiwan, Hong Kong, Brazil and Middle East. The Taiwan promotion will use a popular pop personality to promote cherries.⁴⁶ USDA has indicated that every dollar spent in the MAP funds for Northwest cherries there was a return of \$5.54 per 20# case on state and federal taxes.
- The larger Northwest cherries are marketed into specific segments under the slogan "The Diamond of Fruit" where if cherries are diamonds, size matters to create a positive association with the larger NW cherries.⁴⁷
- Washington State Apple Commission has tested past advertising industry efforts during the years 1990, 1992, 19993 and 1994 and found a positive relation with sales.

Ontario

- The Ontario Apple Commission has a province wide brand identification and quality assurance program for Ontario apples called the Orchard Crisp. The objective of supporting the brand is to establish the quality and crispness standards and promote the varieties of the Ontario industry. Apples are assured to be within a safe residue level, properly labeled so as to identify producing orchard, meet specific Canada Fancy colour and appearance standards and exceed crispness standards.⁴⁸
- The Ontario Apple Commission has hired a Mississauga marketing firm to develop a long term marketing strategy for the Ontario annual harvest. The commission spends \$400,000 marketing apples domestically and close to \$100,000 promoting exports.⁴⁹

New Zealand

- ENZA has developed various joint ventures with wholesalers, food brokers and research and development to gain better positions and long term gains in position within the export markets.⁵⁰ ENZA is promoting their fruit through a "Mil-LOONEY-um Trip of a Lifetime" sweepstake. Canadian and US customers are asked to look for the Looney Tunes labeled ENZA apple & pears and the Cool Cuts Fruits, Veggies and Dip and then send in the label to enter a sweepstake draw for a trip to New Zealand on January 1, 2000.⁵¹

⁴⁶ Good Fruit Grower, Cherries hold their own in today's competitive produce departments.

<http://goodfruit.com/archive/June-99/feature6.html> November 1, 1999.

⁴⁷ USDA, Foreign Agricultural Service <http://www.fas.usda.gov/http/marketing/MAPSucces/NWCHERRY.htm> October 29, 1999.

⁴⁸ Ontario Apple Commission web site. <http://ontarioapples.com> November 4, 1999.

⁴⁹ McNaughton, D. (March, 1999). Competitive apple market takes bit out of old favourites. Ottawa Citizen.

⁵⁰ ENZA web site. <http://www.enzafruit.com.nz> October 31, 1999. Current News Stories section.

⁵¹ ENZA web site. <http://www.enzafruit.com/promotio.htm>. November 6, 1999.

California

- The program of the California Tree Fruit Agreement has focused on educating consumers to ripen stone fruit by using a paper bag. The program was seen as successful basis a follow up research completed by an independent research firm.⁵²
- USDA Market Access Funds (MAP) funded promotion nearly quadrupled California cherry sales to Taiwan. Funds were used to stimulate awareness, announce availability, provide in-store demonstrations and support retail cooperative advertisements.

Other

- The Canadian Produce Marketing Association together with Canadian Heart & Stroke Foundation and the Canadian Cancer Society will be implementing a promotion campaign to educate consumers on how and why to include fresh fruits and vegetables in the diet. The slogan "Are You Getting Enough?" will be presented through a web site, advertising, public relations, 1-800 and public service announcements.⁵³

⁵² USDA, Foreign Agricultural Service, Horticultural and Tropical Products Division <http://www.fas.usda.gov/http/> October 29, 1999.

⁵³ USDA, Foreign Agricultural Service. (October 28, 1999). World Trade Situation and Policy Updates.

8. Overview Of Key Markets For B.C. Tree Fruits

Currently, the key markets for BC apples includes:

(Based on export trade data of volume and sales in the years 1996 – 1998 and ranked from 1 to 10).⁵⁴⁵⁵

United States
Philippines
Taiwan
Indonesia
Thailand
Mexico
Singapore
United Kingdom
Hong Kong
Malaysia

Currently, the key markets for B.C. soft fruits includes:

(Based on export trade data of volume and sales in the years 1996 – 1998).⁵⁶⁵⁷

- Pears: United States, Hong Kong, Colombia, South Korea, Taiwan and Mexico
- Apricots: United States
- Cherries: United States, United Kingdom, Taiwan, Belgium, Japan, Netherlands, Germany and Thailand
- Peaches and Nectarines: United States
- Plums: United States and Jamaica

Note that pears and cherries have traditionally had a much larger export sales volumes than the balance of the soft fruits. For example, the 1997 export sales in Canadian \$ for each category of soft fruit was as follows: pears 734,247, cherries 477,719, apricots 18,505, peaches/nectarines 78,190, and plums 32,796. The volume of cherries and pears has trended upward strongly based on the 1996 to 1999 data.⁵⁸

⁵⁴Statistics Canada

⁵⁵ Agriculture & Agri-Food Canada, International Markets Bureau, Market & Industry Services, Trade Data.

⁵⁶Statistics Canada

⁵⁷ Agriculture & Agri-Food Canada, International Markets Bureau, Market & Industry Services, Trade Data.

⁵⁸Statistics Canada

Market Development Issues and Potential

The effect of the Asian crisis was a fall in the volume of apple exports to Asia in the 1997/98 season. In the 1998/99 season the volume had increased but prices remained low. The recovery of these countries' currency and increase of economic growth are the main factors affecting apple export potential.

Taiwan

- Currently Taiwan applies a quota system to all product imported to the country other than those from Canada and United States. However, upon acceptance of China and Taiwan to the World Trade Organization preferential treatment would no longer be allowed for these countries. The net result is a potential decrease in the export of apples (primarily Fuji) to Taiwan.
- The Fuji apple is popular in Taiwan. China may begin to export to the Taiwan market as their Fuji apple quality increases taking away this prime export market for BC and US.⁵⁹
- Washington Fuji apples exports increased 21% in 1998/97 partially due to promotional efforts by the Washington Apple Commission. The Commission used the slogan "Washington Apples are #1 in the US and in the World" and provided information on growing technique position Washington's Fuji as a market leader. USDA market development funding assisted the switch in Taiwan from Red Delicious to the higher priced Fuji.
- USDA funded marketing programs (MAP) assisted the development of the Taiwan market as the largest single export market for Northwest cherries. Promotions included efforts such as consumer sampling of North West cherries
- Taiwan is the largest importer of fresh apples among select Asia Pacific countries. 1994 imports of fresh apples from all sources totaled US \$109 million.

Malaysia

- Malaysians are beginning to look for a more modern food buying experience such as shopping in large supermarkets which stock a larger range of products sourced from outside Malaysia. This may expand the potential market for apples and other fruits in Malaysia.⁶⁰ However, in Malaysia price is a big factor and therefore as China's (lower priced) apple quality improves the market competition will increase. Canada is currently the second largest supplier of apples (BC) to Malaysia after the United States but in recent years Canada has been losing export share to the US.

Indonesia⁶¹

- The population of Indonesia is estimated at 200 million and is one of the fastest growing in Asia. This population base coupled with future economic growth could provide strong potential for import of fresh tree fruits.

^{59 59} Good Fruit Grower. (October 1999). More apples go to Asia, but uncertainties loom <http://www.goodfruit.com> November 17, 1999.

^{60 60} Good Fruit Grower. (March 1999). Price is a big factor for Malaysian shoppers. <http://www.goodfruit.com> November 17, 1999.

⁶¹ Agriculture & Agri-Food Canada, Trade Evaluation Division, Agri Food Export Assessment Report, Indonesia, Feb.1997.

Philippines⁶²

- The market for fresh fruit is considered strong based on the following: strong population growth, high level of economic growth bringing increased levels of disposable income, focus on fresh fruits (e.g., apples and grapes) in the Filipino diet, emphasis of the nation's agriculture to the export market and increase of exposure that supermarkets, restaurants and hotels bring to fresh fruits.
- The preferred apple variety is Red Delicious, accounting for 90 of apple imports.

Singapore⁶³

- The per capita fruit consumption is estimated at 12.2kg and is among the highest in South East Asia.
- The Singapore market prefers a crisp, firm, crunch and smaller fruit. Gala is a popular variety.
- Singapore Fruit Exchange that controls over 80% of the market oversees fruit exports.
- The government health supports healthy eating thus supporting fruit consumption.

United States

- Per capita consumption is high but relatively flat for a developed country.
- Promotion efforts from the Washington Apple Commission to increase U.S. consumption of apples may have a positive spin-off effect to increase exports to that market.

Domestic Canada

- Canada has a high but relatively flat per capita consumption.
- The natural east to west flow within Canada provides a positive bias for B.C. versus Washington.

⁶² Agriculture & Agri-Food Canada, Trade Evaluation Division, Fresh Fruit & Vegetable Market in the Philippines, September 1998.

⁶³ Agriculture & Agri-Food Canada, Trade Evaluation Division, Agri Food Export Assessment Report, Singapore, Feb. 1996.

9. Overview Of Existing And Potential Competitors In Region's Key Markets

The major and existing competitors of British Columbia include United States (specifically Washington), Argentina, Chile, New Zealand and other Canadian provinces. Exhibit 9.1 provides the production level of these countries in comparison to Canada and B.C. Each of these competitors are discussed in the section below in terms of their production, varieties grown, future consideration in the tree fruit market and the effect on British Columbia.

Exhibit 9.1 World Major Producers of Apples 1997 - 1998 Canadian Competitors

(Production in Metric Tonnes)

Country	1998-1999	1997-1998
United States	5,000,000	4,750,000
Canada	497,831	502,908
Argentina	1,351,315	1,253,626
Chile	1,010,000	970,000
Brazil	690,000	708,000
South Africa	638,000	648,720
New Zealand	535,720	479,650
British Columbia	159,024	121,740

Source: Statistics Canada, Trade Data, Agriculture & AgriFood Canada, Market & Industry Service Branch, Canadian Fruit Situation & Trends 1999

United States

The World Apple Review 1999 edition estimates the US 1998 apple crop at 4,964, 000 metric tonnes ranking the U.S. as the second largest apple producing country behind China.^{64 65} Overall, the United States tree fruit production volume has trended slightly upward over the past years. Currently, over 50% of the U.S. apple production is sold into the fresh market of which Washington and California produce 70% and 30%, respectively. The East and Central regions of United States continue to supply domestic fresh and processing markets.

⁶⁴ Agriculture & Agri-Food Canada, Market Industry Services Branch, March 25, 1999. 1998/1999 Canadian Fruit Situation and Trends.

⁶⁵ O'Rourke, D. (1999). World Apple Review 1999 edition, Belrose Inc.

Exhibit 9.2 and Exhibit 9.3 provide the acreage and production volume of tree fruits within the US.

Exhibit 9.2 Bearing Acreage for Select Tree Fruits, United States, 1978 to 1998

Year	Apples	Peaches --1,000 acres--	Pears	Sweet Cheeries	Tart Cherries	Prunes and plums	Apricots
1978	404.3	198.0	85.0	49.6	40.8	116.7	27.9
1979	407.6	193.9	82.7	48.3	40.8	116.9	24.8
1980	412.2	194.2	81.0	47.0	42.0	111.5	24.8
1981	414.9	188.3	76.1	45.9	40.8	107.4	23.3
1982	418.3	188.6	74.4	44.8	40.3	109.6	22.5
1983	424.5	190.4	70.7	44.4	40.9	112.3	21.8
1984	422.9	194.3	69.1	44.5	43.7	113.9	20.9
1985	430.7	193.1	68.6	44.7	45.7	117.5	20.0
1986	442.4	191.0	67.6	45.4	48.2	120.1	19.6
1987	452.3	190.1	68.7	46.6	50.1	124.9	19.2
1988	447.9	182.4	68.9	47.5	49.2	129.2	19.2
1989	450.4	182.7	69.4	46.9	49.2	127.4	18.7
1990	451.5	180.0	69.3	45.9	48.7	130.4	18.4
1991	449.2	178.3	69.8	45.0	48.1	130.4	18.8
1992	455.1	179.4	70.1	45.6	48.5	130.4	19.6
1993	459.7	173.4	69.8	46.7	48.8	131.4	20.8
1994	459.5	169.1	70.3	49.6	47.2	132.1	21.3
1995	462.6	164.6	69.5	52.1	44.7	131.5	21.2
1996	467.6	164.3	68.7	54.8	42.6	132.8	21.6
1997	468.0	157.8	66.9	56.6	40.3	128.7	21.4
1998	467.6	159.4	66.2	57.3	40.3	129.5	21.4

Source: USDA <http://www.usda.gov> November 7, 1999

Exhibit 9.3 Total Commercial Production for Select Tree Fruits, United States, 1978 – 1998

Year	Apples	Peaches	Pears	Cherries	Cherries	Prunes	Apricots
				Sweet	Tart	and plums	
1978	3,799	1,326	723	157	91	634	126
1979	4,063	1,469	855	184	85	661	144
1980	5,509	1,534	897	174	109	821	129
1981	3,870	1,385	897	155	67	765	89
1982	4,061	1,143	802	157	155	573	118
1983	4,189	928	774	181	77	674	93
1984	4,162	1,330	708	182	136	721	127
1985	3,957	1,074	745	133	143	648	131
1986	3,930	1,153	767	138	112	491	55
1987	5,371	1,191	938	215	180	977	114
1988	4,560	1,311	860	186	118	739	102
1989	4,958	1,182	916	194	132	1,018	120
1990	4,828	1,121	962	157	104	734	122
1991	4,853	1,348	903	149	95	831	96
1992	5,284	1,336	923	205	168	829	106
1993	5,343	1,322	948	168	170	588	97
1994	5,750	1,255	1,046	207	152	879	153
1995	5,289	1,145	948	165	198	744	61
1996	5,191	1,052	821	154	136	255	73
1997	5,162	1,312	1,043	226	147	899	139
1998	5,694	1,215	955	210	174	542	118

Source: USDA <http://www.usda.gov> November 7, 1999

The top twelve apple export destinations ranked by volume (1993-1997) for the United States are:

- Taiwan
- Canada
- Mexico
- Hong Kong
- Indonesia
- Saudi Arabia
- United Arab Emirates
- United Kingdom
- Venezuela
- Philippines
- Thailand
- Malaysia

Source: USDA <http://www.usda.gov> November 7, 1999

Canada is the second largest export market for the U.S. The countries of Taiwan, Mexico, Hong Kong, Indonesia, United Kingdom, Philippines, Thailand and Malaysia are in the top ten export destination of both the U.S. and Canada.

The major soft fruit exports destinations for the United States are similar to those of B.C. making U.S. a competitor in both apples and soft tree fruits. The major export markets for the U.S. include based on 1998 and 1999 data include:

- Pears: European Union, Canada, Mexico, Brazil, and Taiwan
- Apricots: Canada, Mexico, Hong Kong, Taiwan and Japan
- Cherries: European Union, Canada, Hong Kong, Taiwan and Japan
- Peaches/Nectarines: Canada, Mexico, Colombia, Hong Kong, and Taiwan
- Plums/Prunes: European Union, Canada, Mexico, Hong Kong, and Taiwan

The United States currently produces a majority of Red and Golden Delicious apples as noted Exhibit 9.4. Sources vary on the exact percentage regarding variety specifics of U.S. production. However, the 1998 data supports the view that approximately 45% to 50% of the U.S. apple production is of the Red and Golden Delicious variety with a general downward trend in the production of these varieties due to the popularity of the newer varieties of Fuji, Gala, Braeburn, and Jonagold. These four varieties account for approximately 15 to 17% of US production. Granny Smith is the third most popular variety grown in the United States.

Exhibit 9.4 Total U.S. Apple Production, by Percentage by Variety

Varieties	1993	1994	1995	1996	1997	1998 Forecast
Red Delicious	43.4%	43.2%	39.8%	42.1%	36.6%	38.8%
Golden Delicious	14.8%	14.3%	14.0%	14.4%	13.9%	14.3%
Fuji	1.9%	3.4%	4.1%	5.3%	6.4%	7.3%
Granny Smith	6.7%	6.9%	5.7%	6.6%	6.6%	6.8%
Rome	6.2%	6.7%	7.0%	5.5%	5.9%	5.2%
Gala	1.7%	2.3%	2.6%	3.4%	3.9%	4.3%
McIntosh	5.0%	4.7%	5.2%	4.5%	5.5%	3.8%
Jonathan	3.0%	2.6%	3.0%	1.9%	2.3%	2.3%
Idared	1.8%	1.9%	2.2%	1.6%	2.1%	1.9%
Empire	1.4%	1.2%	1.7%	1.8%	2.0%	1.6%
York	2.6%	1.7%	2.2%	1.7%	1.8%	1.3%
Newtown	1.7%	1.7%	1.4%	1.2%	1.2%	1.1%
Cortland	0.8%	0.9%	1.0%	1.0%	1.0%	0.9%
R. I. Greening	1.1%	1.1%	1.3%	1.0%	0.9%	0.8%
Northern Spy	0.8%	0.7%	0.9%	0.5%	0.8%	0.7%
Stayman	1.4%	0.7%	0.9%	0.6%	0.7%	0.6%
Winesap	1.1%	0.7%	0.7%	0.3%	0.4%	0.4%
Gravenstein	0.6%	0.5%	0.4%	0.2%	0.2%	0.2%
All Others	4.0%	4.8%	6.1%	6.6%	7.7%	7.7%

Source: U.S. Apple Commission website <http://usapple.org> November 1, 1999.

Exhibit 9.5 Cash Receipts, United States Tree Fruit US\$1975 – 1998

Year	Apples	Cherries	Nectarines	Peaches	Pears	Plums and prunes
1975	502,151	88,747	30,525	311,249	105,395	105,574
1976	508,739	102,842	31,360	251,833	105,066	112,955
1977	617,205	134,233	31,775	274,817	105,756	128,106
1978	795,679	185,826	45,436	297,319	150,804	156,073
1979	867,143	188,566	33,884	327,916	174,114	162,108
1980	705,312	135,175	44,121	364,089	174,717	198,156
1981	790,118	157,685	41,678	404,813	162,740	180,983
1982	856,880	127,045	44,322	262,558	147,525	180,578
1983	738,707	176,966	55,500	255,798	136,795	169,455
1984	951,214	164,006	57,779	319,646	150,440	157,863
1985	892,446	163,770	68,723	295,149	193,084	195,734
1986	927,286	156,859	75,720	314,926	198,360	199,876
1987	1,060,109	181,653	65,545	308,970	195,742	205,695
1988	941,721	189,105	85,593	383,687	218,359	255,020
1989	984,458	172,612	87,645	361,374	258,638	251,946
1990	1,078,002	156,162	109,999	374,167	260,863	295,334
1991	1,646,442	228,835	86,457	396,109	271,577	256,412
1992	1,589,220	233,391	73,710	379,749	275,242	254,126
1993	1,361,603	223,774	102,421	395,231	247,041	261,545
1994	1,353,062	248,603	68,168	314,449	226,773	257,255
1995	1,579,389	211,524	93,990	401,393	241,278	324,005
1996	1,844,069	264,769	116,977	389,894	292,788	291,779
1997	1,539,575	323,422	98,895	440,888	306,762	258,790
1998	1,411,393	269,102	108,502	443,819	275,611	231,866

Source: U.S. Apple Commission website <http://usapple.org> November 1, 1999.

Washington State

The state of Washington produces approximately half of the U.S apple production with a total volume of production of approximately 2,500,000 tons⁶⁶. The 1997 Washington production and production volumes for apples, cherries and pears are noted in Exhibit 9.6.

⁶⁶ Washington State University, (1999). Pacific Northwest Agricultural Situation & Outlook Report. <http://coopext.cahe.wsu/~news/outlook99.html> November 2, 1999.

Exhibit 9.6 Washington Tree Fruit Production & Prices 1988 – 1997

APPLES		Production 1,000 Tons	Marketing Year
			Avg. Price \$/Ton
	1988	1,950	260
	1989	2,500	186
	1990	2,400	328
	1991	2,150	440
	1992	2,325	308
	1993	2,500	284
	1994	2,925	276
	1995	2,425	430
	1996	2,750	332
	1997	2,500	328
SWEET CHERRIES			
	1988	62	983
	1989	84	802
	1990	66	1,180.00
	1991	50	1,200.00
	1992	97	871
	1993	80	1,240.00
	1994	82	1,200.00
	1995	75	1,520.00
	1996	69	1,780.00
	1997	95	1,430.00
BARTLETT PEARS			
	1988	147	244
	1989	157	258
	1990	177	248
	1991	160	270
	1992	170	272
	1993	163	269
	1994	174	226
	1995	180	230
	1996	105	376
	1997	205	262

Source: USDA, Washington Agricultural Statistics

Exhibit 9.7 provides the variety breakdown for Washington state and indicates a decline of Red and Golden Delicious and an increase in other newer varieties.

Exhibit 9.7 Apple Variety and Percentage of Washington Production 1992 – 1998

	1992	1997	1998
Red Delicious	68.4	54.1	44.8
Golden Delicious	15	15.2	12.9
Fuji/Gala/Braeburn/Jonagold	5.6	20.1	26.1

Source: O'Rourke, D. Summary Topics, IMPACT Centre, Washington State University <http://impact.wsu.edu/>

Future consideration in the U.S. tree fruit market include:⁶⁷

- The large amount of new plantings of the varieties of Gala, Fuji, Braeburn, and Jonagold. As these new planting come onstream the effect there will be downward pressure on the price of the variety.⁶⁸
- Strong U.S. currency relative to the Southeast and East Asian countries may have the effect of decreasing export fresh apple volumes to those markets.
- Suspension of the anti-dumping investigation on U.S. apples into Mexico may create increased exports.
- U.S. filing and winning of an anti-dumping action against China for supplying low-priced concentrate. Hungary, Argentina and Chile are also low priced suppliers to the U.S. market.⁶⁹

Other Major Competitors

Other major competitor countries of British Columbia include Argentina, Chile, New Zealand, China and other Canadian provinces. The level of production and export prices for these countries are provided in Exhibit 9.8.

Exhibit 9.8 Production of Apples, Major Competitors, Average 1979/81

(Thousand metric tonnes)

Country	Average	1989-91	1992-94	1995-97	Preliminary
	1979-81				1998
Chile	251	705	827	853	880
Argentina	946	1015	1004	1317	1347
Australia	317	317	317	317	360
Brazil	87	516	666	698	787
New Zealand	211	351	469	548	501
South Africa	395	525	556	549	515
China					17508

Source: O'Rourke, D. Summary Topics, IMPACT Centre, Washington State University <http://impact.wsu.edu>

Exhibit 9.9 Export Price for Fresh Apples, Selected Countries

	1990-91	1991-92	1992-93	1993-94	1994-95	1995-96	1996-97	1997-98
								Estimate
South Africa	680	521	275	589	459	558	554	514
Chile	392	451	365	402	456	569	533	461
Argentina	434	546	506	482	564	564	562	562
New Zealand	845	862	822	904	1058	996	937	821

Source: Belrose Inc., World Apple Review 1999 edition.

⁶⁷ USDA Economic Research Service. (August 1998). Fruit & Tree Nuts Situation and Outlook Report.

⁶⁸ O'Rourke, D. (March 1997) Trends in Production, Utilization, and Price of Washington Apples to 2005, IMPACT Center, Information Series #90.

⁶⁹ Agriculture & Agri-Food Canada, Market Industry Services Branch. (March 25, 1999). 1998/1999 Canadian Fruit Situation and Trends.

These countries affect Canadian and B.C. because they act as direct competitors in the fresh apple export markets. As well the release of these countries' harvested crops in the North American spring tends to pressure prices in the North America markets.

Argentina

The 1998 apple production for Argentina was estimated at 1,347,000 metric tonnes.⁷⁰ The apple industry has invested in new varieties, packinghouses and export marketing programs. Those investments together with relatively high level of production relative to domestic consumption place Argentina in a strong competitor. In 1998, Argentina was the fourth largest importer to Canada.⁷¹ Argentina is also a major world supplier of apple juice concentrate.

Chile

The 1998 apple production for Chile was estimated at 880,000 metric tonnes, with the expectation of a 20 to 30 % increase in production in the next decade.⁷² A major export market for Chile is the United States with Chile supplying 20% of imports in apples. Chile is currently in the process of replacing older varieties indicating they will continue to be a strong player in the export market. Chile is the fourth largest importer to Canada of fresh apples.⁷⁴

New Zealand⁷⁵

The 1998 apple production for New Zealand was estimated at 501,000 metric tonnes. Export income at September 30, 1998 for fresh fruit exports earned \$198 million (New Zealand dollars) which was up 25% from the prior year. Export markets consist of Continental Europe and Scandinavia, United Kingdom, North America, and the Asia Pacific in order of ranking based on export sales turnover.⁷⁶ Seventy percent of the export income is currently from Braeburn, Gala and Royal Gala varieties.⁷⁷ Note that New Zealand has consistently been the second largest fresh apple importer to Canada and provides one third of fresh apples imports to the US market making it a strong competitor to Canada.

The New Zealand export industry is encouraging the adoption of integrated fruit production (IFP) by growers with approximately 350 of the 1,700 growers currently adopting techniques and a target of total adoption by year 2001. One of the advantages of IFP is to maintain access European markets.⁷⁸

In 1999, the New Zealand export apple industry was ranked as the best in the world for the fourth consecutive year. The ranking was conducted through a study by the World Apple Review, 1999⁷⁹ and was based upon production efficiencies (e.g., planting densities, variability of production, yields), industry infrastructure (e.g., land, packers, water) and financial and market factors (e.g., interest rate, quality factors, export price levels).

New Zealand has used to their advantage their strong apple climate/growing conditions and innovation in varieties to become a strong player in the world market. The major drawback for New Zealand apple

⁷⁰ O'Rourke, D. (1999) World Apple Review 1999 edition, Belrose Inc.

⁷¹ Source: Statistics Canada

⁷² US Apple Association. (1999). 1999 Apple Crop Outlook and Marketing Conference. <http://usapple.org> October 22, 1999.

⁷³ O'Rourke, D. (1999) World Apple Review 1999 edition, Belrose Inc.

⁷⁴ Statistics Canada

⁷⁵ ENZA website <http://www.enzafruit.com> November 1, 1999.

⁷⁶ ENZA web site. <http://www.enzafruit.com.nz> October 31, 1999. Current News Stories section.

⁷⁷ O'Rourke, D. (1999) World Apple Review 1999 edition, Belrose Inc.

⁷⁸ Good Fruit Grower. (October 1998). Hood River growers look for a competitive edge with IFP, IMPACT Center. <http://www.goodfruit.com> October 31, 1999.

⁷⁹ O'Rourke, D. (1999) World Apple Review 1999 edition, Belrose Inc.

exporting is their distance from import markets relative to their competitors. New Zealand export apples are marketed through the New Zealand Apple & Pear Marketing Board called ENZA. ENZA is the sole agency for export pip fruit and is a statutory body responsible to the New Zealand Minister of Agriculture. The board accepts and takes ownership of fruit from growers and markets is under an ENZA brand name. Note that ENZA is not an acronym but a name chosen to represent the brand and the agency.

New Zealand has consistently obtained a high price level in comparison to other Southern Hemisphere exporters. As prices of the current varieties grown by New Zealand decline the future focus will be on the development of successful new export targeted varieties. This "early in the market" strategy has been successful in capturing early price premium (e.g., gala variety price premiums in 1998).

Factors of Consideration:⁸⁰

- "In-market packing" which ships bulk bins from New Zealand packing the fruit on the day before it is sold to the customer resulting in lower shipping costs. ENZA plans to have 40 to 50 % of its product transported using this method within three years.
- Packaging innovations such as the 12.5 kg retail display case that fits directly on the supermarket shelf.
- ENZA is taking action to protect New Zealand varieties in countries such as Chile after determining that select varieties were taken privately during a visit to New Zealand and planted in Chile.⁸¹
- Use of joint venture companies to create export alliance within countries such as the United Kingdom and Chile.⁸² The UK alliance is with a major wholesaler serving such supermarket chains as Marks & Spencer. The Chilean venture involves an alliance between ENZA's current Chilean subsidiary and international fruit exporter, Chiquita.
- Continued competition to Taiwan and Southeast Asian countries.
- Increased Canadian imports from New Zealand.

China

China is reported to have increased production from approximately 4,332,000 metric tonnes in 1990 to 17,508,000 metric tonnes in 1998.⁸³ However, less than 2% of that production is exported due to lack of infrastructure associated with packing, shipping and storage. China's new role as a top world producer and the eventual development as a major exporter will have a strong influence on both the fresh and juice apple markets.⁸⁴ However, Desmond O'Rourke, Professor of Agricultural Economics and Director of the IMPACT Center at Washington State University, believes that the China will not become a real market player within the next 10 years.⁸⁵ (November 1, 1999). Major varieties include Fuji, Qinguan, and Red Star.

⁸⁰ Hort Research web site <http://www.hortnet.co.nz> November 1, 1999

⁸¹ ENZA web site. <http://www.enzafruit.com.nz> October 31, 1999. Current News Stories section.

⁸² ENZA web site. <http://www.enzafruit.com.nz> October 31, 1999. Current News Stories section.

⁸³ O'Rourke, D. (1999) World Apple Review 1999 edition, Belrose Inc.

⁸⁴ Shi, H. and Wahl, T. (May 1996) Recent Developments in the Chinese Fruit Industry: Implications for the U.S. Fruit Industry, IMPACT Center Information Series #83.

⁸⁵ US Apple Association. (1999). 1999 Apple Crop Outlook and Marketing Conference. <http://usapple.org> October 22, 1999

Other Canadian Provinces

The province of Ontario is the major provincial competitor within the domestic market. Exhibit 9.10 indicates that Ontario has the largest volume of all Canadian provinces with B.C. in second place in terms of total volume.

Exhibit 9.10 Apples Production in Tons – By Province from 1926 – 1988

YEAR	NOVA SCOTIA	NEW BRUNSWICK	QUEBEC	ONTARIO	BRITISH COLUMBIA
1990	75,600	8,715	101,031	216,925	194,349
1991	54,180	7,728	118,441	241,429	146,498
1992	78,960	7,938	137,970	228,017	168,802
1993	50,400	6,731	97,770	206,149	171,891
1994	48,300	4,095	96,693	252,044	208,971
1995	58,800	5,730	113,175	305,133	176,939
1996	53,647	4,890	90,236	248,366	167,810
1997	49,650	4,422	94,788	270,708	134,195
1998	46,603	3,400	73,350	217,985	173,675

Source Statistics Canada

Based on Exhibit 9.11, Ontario and B.C. account for 30.9% and 57% exports as a total of Canadian export indicating that Ontario may have a greater share within the domestic market of Canada. This may be an area for BC and Ontario competition. Recently the Ontario Apple Commission had developed a long-term marketing strategy for the Ontario annual harvest and plans to spend \$400,000 marketing apples domestically and close to \$100,000 promoting exports.⁸⁶ Also, the Ontario Apple Marketing has a province wide brand identification and quality assurance program for Ontario apples called the Orchard Crisp. These coordinated efforts may make inroads to domestics market more difficult for B.C.

Exhibit 9.11 Value and Volume of Fresh Apple Export from Canada by Province (Crop Year)

Value \$CDN '000)	5 year Average	% of Total Canadian Export	
	1993-1997	1997/1998	1997-1998
Canada	52,102	43,958	100.0%
BC	34,911	25,044	57.0%
Ontario	11,698	13,604	30.9%
Quebec	4,563	4,679	10.6%

Quantity (metric tonnes)	5 year Average	1997-1998	
	1993-1997	1997/1998	Percentage
Canada	81,127	74,575	100.0%
BC	42,147	32,866	44.1%
Ontario	27,617	31,597	42.4%

Source Statistics Canada

⁸⁶ McNaughton, D. (March 1999). Competitive apple market takes bit out of old favourites. *Ottawa Citizen*.

10. Marketing Distribution Channels (In B.C. And Elsewhere)

Marketing channels refers to the distribution system by which the product moves from the farm gate to the final consumer. The following section discusses the market issues within the market channels distribution.

10.1 Niche/Volume

The potential for niche markets within the world apple sector appears to be low because many of the apple export countries produce a similar variety and are able to ship to import countries around the world. The result is apple exporters now sell similar varieties of apples to a world market that creates price takers of smaller countries and strong price competition among larger apple export countries. Niche markets (in the apple industry) tend to disappear as quickly as they appear. Desmond O'Rourke⁸⁷ noted that the potential for future niches within the apple sector was low and provided an example of a historical niche as the price premium obtained by New Zealand with the early production and marketing of Gala apples. Desmond O'Rourke noted that a price premium for varieties would probably be difficult to replicate especially over a length of time. O'Rourke also mentioned the natural West - East flow of Canadian products as a niche for the B.C. apple growers to exploit as a competitive advantage over Washington exporters. Industry experts noted that any one variety was probably not the niche solution for the apple export market. B.C. (as well as other world apple producers) will need to pick what they are good at producing and supplying to the world apple markets and focus on issues of market coordination and quality to ensure their market share.

Other niche market areas noted by producers and industry include:

- Packaging of product in retail friendly packages to encourage better presentation and handling of product (e.g., ENZA currently packages supermarket boxes).
- Market development with retail (large and small outlets) to increase presentation of the B.C. and variety specific tree fruits within the retail environment (e.g., not just a large bin of apples but well presented and promoted).
- Organic and integrated fruit production may be areas to develop niche markets to the California, European and the domestic markets.
- Size of fruit could be used to differentiate the tree fruit product and is an area where there may be potential for a niche market (e.g., Marketing of the larger apples to Asian countries, smaller apples to school lunch programs).
- Development of small B.C. tree fruit & apple stores in high tourism areas to sell B.C. product at premium price to those willing to pay higher prices. Stores could carry a range of apple related product such as juice, and fresh, packaged.

The soft fruit area is an area where niche marketing may have greater potential. Industry experts noted that cherries could be viewed as a commodity or as the latest exotic fruit depending upon the quality and taste of the cherry. Airfreight exports to locations such as Taiwan have been a successful and growing niche markets for cherries. Other potential areas for niche markets may include products such as large, clean apricots and white, fleshed peaches selling to South East Asia markets in small volumes with price premiums.

⁸⁷ O'Rourke, Desmond. Professor of Agricultural Economics and Director IMPACT Center at Washington State University, Pullman Washington. (November 1, 1999) Personal Interview by phone.

10.2 Integrated Fruit Production (IFP)

Integrated Fruit Production may be an area with market potential for B.C. IFP would allow B.C. to market products as natural and thus provide a slightly differentiated product to the market. The New Zealand export industry is encouraging the adoption of integrated fruit production (IFP) by growers. Approximately 350 of the 1,700 growers are currently adopting techniques. New Zealand is targeting total adoption by the year 2001. One of the main advantages of IFP to New Zealand is to maintain access to European markets.⁸⁸ Washington State is also beginning to take interest in the environmentally friendly production of IFP.

10.3 Organic

Based upon interviews with industry experts and current organic growers the following observations were noted:

- Demand of the organic product by the ordinary consumer could be gauged as fairly low based on the amount of shelf space dedicated to organics in the average retail supermarket in Canada and the US.
- Specific regions in B.C. (e.g., Keremeos region) are well suited to organic production due to climate and general growing conditions. However, these regions are smaller and organic production may not be as easy to implement outside of these regions.
- Organic price levels may be declining thus decreasing returns to organics. However, one of the problems is the lack of price specific information available to determine the return potential to organics.
- Increase of organic based retail sector outlets (e.g., Capers, Choices) and delivery service (e.g., Organics to You) in the Vancouver area. The increases are positive in terms demand indications from consumers and for grower access to the organic market.
- Industry producers noted the need for an organic produce education and promotion program by a central national agency (e.g., Agriculture & Agri-Food Canada and Health Canada). The objective of the national program would be to encourage consumption of organic products by Canadians. Organic standards at the B.C. provincial level were noted as defined under Food Choice and Disclosure Act – organic product regulations.
- The market potential of combining the Buy BC program with a quality B.C. organics product line was noted.
- B.C. should be geographically positioned for organic marketing basis the interest within B.C., Pacific Northwest and Asian organic potential market.
- New Zealand currently obtains a premium for their organic apple in the United Kingdom.⁸⁹

10.4 Coop/Private Packers

Based on expert interviews approximately 70% of apples move through the cooperative packinghouse. The balance of the apples is shipped through the independent packers.

⁸⁸ Good Fruit Grower. (October 1998). Hood River growers look for a competitive edge with IFP, IMPACT Center <http://www.goodfruit.com> October 31, 1999.

⁸⁹ ENZA web site. <http://www.enzafruit.com.nz> October 31, 1999. Current News Stories section.

Growers decide to ship to either an independent or a cooperative packer based on their own philosophy of marketing, quality and variety of product, and proximity to packers. This is an area for future research as it would assist growers determine how and why decisions regarding use of packers are made.

10.5 Branded/Unbranded

Branding issues noted from expert interview and research studies were as follows:

- There may be some potential to combine brand and new packaging developments. Currently retailers take apples out of the brand labeled boxes and dump them in to the bin. However, if a branded consumer/retail package could be provided to allow greater awareness of the B.C. Tree Fruits brand. New Zealand has recently developed a branded retail box specifically for the retail/supermarket. The box is made to fit directly on the shelf and is the correct size for consumers to take home.
- An independent study showed that displays with branded "Washington Apple" cartons boost retail sales by 27%.⁹⁰
- The Ontario Apple Marketing Commission has a province wide brand identification and quality assurance program for Ontario apples called the Orchard Crisp.⁹¹
- ENZA (not an acronym) is the new name of the New Zealand Apple and Pear Marketing Board and was developed as a brand name. Promotion efforts have been made to increase awareness.⁹²
- BCTF leaf logo and brand name is one of strong recognition.⁹³
- Several experts indicated that the size of the B.C. production was too small to develop and support a B.C brand promotion that would increase Canadian fresh tree fruit consumption. However, the Washington Apple Commission and the Canadian Produce Marketing Association are both taking strong initiatives to increase apple consumption.

10.6 Estate/Industrial Processing

This is an area where data was not readily available.

90 Washington State Apple Commission. <http://www.apple.org> November 11, 1999.

91 Ontario Apple Commission web site. <http://ontarioapples.com> November 4, 1999.

92 ENZA web site. <http://www.enzafruit.com.nz> October 31, 1999. Current News Stories section.

93 B.C. Tree Fruits Limited web site, <http://www.bc.tree.com> November 4, 1999.

11. Global Tree Fruit Marketing Related Data

11.1 Global Trends By Variety And Country Or Region For:

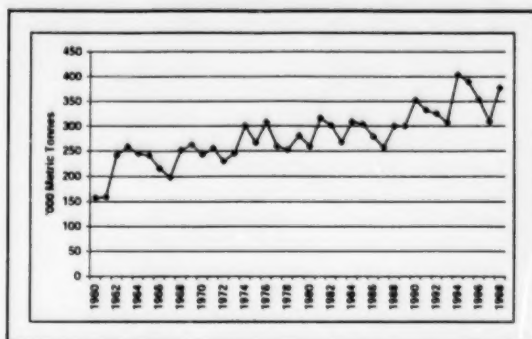
11.1.1 Total Consumption

The 1998 per capita fruit consumption for Canadians increased to approximately 121 kg, up from about 111 kg in 1990. The consumption of fruit juices such as apple, orange and grapefruit contributed to this increase in total fruit consumption. Each Canadian consumes approximately 12 kg of apples.

11.1.2 Fresh Fruit Consumption

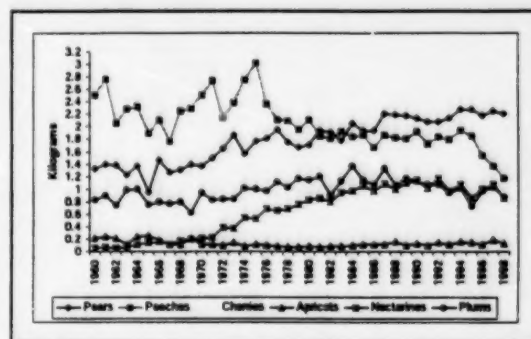
Exhibit 11.1 indicates that the consumption trends within Canada for fresh apples has been increasing since 1962. Exhibit 11.2 indicates that the volume of fresh tree fruit consumption with the exception of cherries and apricots has been increasing.

Exhibit 11.1 Canadian Per Capita Consumption of Fresh Apples, 1960 - 1998



Source: Statistics Canada

Exhibit 11.2 Canadian Per Capita Consumption of Fresh Tree Fruits



Source: Statistics Canada

Exhibit 11.3 and Exhibit 11.4 provide the consumption trends for key markets of Canada and British Columbia and indicate that per capita consumption trends are fairly flat.

Exhibit 11.3 Estimated Per Capita Consumption, kilograms per capita 1990 - 1998 estimate

	1990	1991	1992	1993	1994	1995	1996	1997	1998p
Argentina	7.12	7.28	7.74	9.26	8.22	12.4	13.52	12.07	10.42
Australia	9.39	9.96	10.25	8.94	9.5	8.25	9.29	8.02	8.26
Brazil	2.9	2.37	3.03	3.16	4.26	4.35	4.56	4.12	4.05
Chile	6.83	5.23	6.25	6.521	6.57	6.47	6.44	6.14	6.18
New Zealand	16.14	13.67	15.12	15.31	15.23	14.44	14.57	14.43	14.29
South Africa	4.94	4.49	5.33	5.55	5.11	5.94	5.75	4.76	4.62
China	n.a.	3.73	5.26	7.23	8.8	10.91	13.14	13.11	13.9
Japan	6.52	3.54	6.61	6.62	6.51	6.38	6.05	6.48	6.27
Taiwan	4.37	5.54	6.14	5.52	6.64	5.63	6.52	6.76	6.39
Mexico	3.57	4.35	5.181	6.67	5.37	4.62	4.87	4.851	4.7
United States	9	8.32	8.791	8.74	8.91	9.17	8.94	8.37	9.07

Source: O'Rourke, D. (1999). World Apple Review 1999 edition, Belrose Inc.

Exhibit 11.4 Per Capita Disappearance of Fresh Apples, 1990, 1994 – 1997 (kg/capita)

	1990	1994	1995	1996	1997
Singapore	9.65	12.12	12.36	10	10.48
Hong Kong	9.84	11.85	11.35	9.2	8.59
Taiwan	3.82	5.85	5.18	6.14	5.46
Malaysia	1.28	2.45	2.71	2.57	3.09
Thailand	0.42	0.98	1.09	1.08	0.63
Indonesia	0.01	0.17	0.23	0.19	0.36

* Re-exports subtracted from imports

Source: O'Rourke, D. (1999). *World Apple Review* 1999 edition, Belrose Inc.

11.2 World Production Of Tree Fruits

World apple production has been increasing since 1990. The world production levels for 1997 was 53,165 thousands of metric tons. The IMPACT Centre at Washington State University estimates the level production to continue to increase up to 68,319 thousands of metric tons by the year 2005. Exhibit 11.5 presents the top ten apple producing countries by volume of which China and United States rank as the top two producers. Note that the largest producers are not always the largest international exporters as they may have large domestic and surrounding populations to absorb the volume.

Exhibit 11.5 Top Ten Apple Producing Countries by Volume, 1998

Country	Rank	Production (1000 metric tonnes)	% of Total Production
China	1	17,508	31.2%
United States	2	4,964	8.9%
France	3	2,500	4.5%
Turkey	4	2,500	4.5%
Germany	5	2,154	3.8%
Italy	6	2,115	3.8%
Iran	7	2,000	3.6%
Poland	8	1,687	3.0%
Argentina	9	1,347	2.4%
India	10	1,300	2.3%
Sum of Top Ten		38,075	67.9%

NOTE: *Estimated World Apple Production 1998 = 56,075,000 metric tonnes*

Source: Belrose Inc., *World Apple Review* 1999 edition

Exhibit 11.6 provides for comparison to the top world producers and the total world production, the volume level and value of apple production for Canada and each apple producing province.

Exhibit 11.6 Apple Production by Province by Volume and Value, Canada*Production (tonnes)*

	5 year average		
	1993-1997	1997	1998
Canada	533,194	502,908	497,831
BC	152,611	121,740	159,024
Ontario	240,356	245,582	220,774
Quebec	88,052	85,990	70,874
N.B.	4,693	4,011	4,681
N.S.	47,319	45,042	42,277

Value (\$,000)

	5 year average		
	1993-1997	1997	1998
Canada	166,278	181,815	156,009
BC	53,239	45,750	50,080
Ontario	71,787	96,085	98,010
Quebec	27,929	26,450	22,665
N.B.	2,017	1,810	2,250
N.S.	11,206	11,425	12,700

Source: Statistics Canada

Current issues of importance in the world apple sector include:

- The role of China as a future exporter - China is reported to have increased production from approximately 4,332,000 metric tonnes in 1990 to 17,508,000 metric tonnes in 1998.⁹⁴ However, less than 2% of that production is exported due to lack of infrastructure associated with packing, shipping and storage. China's new role as a top world producer and the eventual development as a major exporter will have a strong influence on both the fresh and juice apple markets.⁹⁵ However, Desmond O'Rourke, Professor of Agricultural Economics and Director of the IMPACT Center at Washington State University, believes that the China will not become a real market player within the next 10 years.⁹⁶ Major varieties include Fuji, Qinguan, and Red Star.
- The movements toward freer market access for the tree fruit and specifically apple trade - The WTO and the North American Free Trade agreement will impact trade flows.
- The recovery of the Asian countries and the rate of exchange among developing and developed countries will impact the level and value of export and imports.

11.3 Tree Fruit Imports And Exports (Sales And Volume)

Exhibit 11.7 provides the top ten export and import countries. As note, the top producers are not always the top exporters. Some of the top exporters are producing for their own country's or surrounding

⁹⁴ O'Rourke, D. (1999) World Apple Review 1999 edition, Belrose Inc.

⁹⁵ Shi, H. and Wahl, T. (May 1996) Recent Developments in the Chinese Fruit Industry: Implications for the U.S. Fruit Industry, IMPACT Center Information Series #83.

⁹⁶ US Apple Association. (1999). 1999 Apple Crop Outlook and Marketing Conference. <http://usapple.org> October 22, 1999

countries consumption while countries such as South America and New Zealand produce mainly for the export market.

Exhibit 11.7 Top Ten Fresh Apple Exporters & Importers by Volume & Value 1997

EXPORTING COUNTRY	VOLUME (METRIC TONNES)	VALUE (US\$ 000)	IMPORTERS COUNTRY	VOLUME (METRIC TONNES)	VALUE (US\$ 000)
France	830,796	539,538	Germany	789,240	456,099
United States	680,249	420,329	U.K.	406,861	397,387
Italy	512,999	273,647	Russian Fed.	295,000	138,000
Chile	411,493	189,581	Belg-Lux	243,139	193,788
Netherlands	296,988	183,645	Netherlands	242,161	149,117
New Zealand	286,769	235,308	Austrai	199,860	33,306
Belg-Lux	276,924	204,026	U.S.	159,085	102,561
Argentina	229,854	129,148	China (incl Taiwan)	141,508	102,046
South Africa	199,800	102,623	Saudi Arabia	131,766	49,132
Poland	191,520	36,046	Brazil	120,537	68,893
Percentage of Total	73	82	Percentage of Total	59	59

Source: Belrose Inc., World Apple Review 1999 edition

The main Canadian provinces exporting apples are BC, Ontario and Quebec as presented in Exhibit 11.8.

Exhibit 11.8 Value and Volume of Fresh Apple Export from Canada by Province (Crop Year)

Value (\$CDN '000)	5 year Average		% of Total Canadian Export	
	1993-1997	1997/1998	1997-1998	
Canada	52,102	43,958	100.0%	
BC	34,911	25,044	57.0%	
Ontario	11,698	13,604	30.9%	
Quebec	4,563	4,679	10.6%	

Quantity (metric tonnes)	5 year Average		1997-1998
	1993-1997	1997/1998	Percentage
Canada	81,127	74,575	100.0%
BC	42,147	32,866	44.1%
Ontario	27,617	31,597	42.4%
Quebec	9,175	9,198	12.3%

Source: Statistics Canada, Trade Data, Agriculture & AgriFood Canada, Market & Industry Service Branch, Canadian Fruit Situation & Trends 1999

Exhibit 11.9 through Exhibit 11.11 indicates that the top B.C. export destinations. United States is the top destination with Philippines and Taiwan ranking as the next largest.

Exhibit 11.9 British Columbia Exports of Fresh Apples by Country 1996 – 1998

	Value (Cdn\$)			Volume (Kilogram)		
	1996	1997	1998	1996	1997	1998
United States	22,460,470	19,008,719	19,836,148	29,185,932	25,517,415	19,470,855
Philippines	10,941,572	7,087,394	5,133,505	12,288,515	8,929,248	8,082,008
Taiwan	3,360,037	974,239	1,104,184	2,204,033	963,770	939,033
Indonesia	2,058,944	2,712,572	188,976	2,560,437	3,794,487	264,937
Thailand	2,649,284	1,607,327	103,988	3,101,373	2,013,782	148,242
Mexico	0	336,244	2,455,660	0	462,997	3,336,986
Singapore	950,381	574,830	740,408	1,074,569	698,669	733,581
United Kingdom	582,694	661,824	264,007	662,277	859,944	368,162
Hong Kong	164,268	95,861	979,806	190,024	132,121	1,487,530
Malaysia	342,727	203,831	57,274	423,698	239,934	57,914
TOTAL	44,508,498	33,845,177	31,409,743	52,686,067	44,406,851	35,708,637

Source: Statistics Canada, Trade Data, Agriculture & AgriFood Canada, Market & Industry Service Branch, Canadian Fruit Situation & Trends 1999

Exhibit 11.10 BC Exports of Fresh Apples by Country (Value in Can\$)

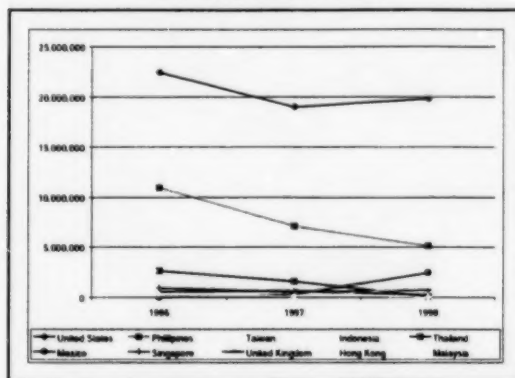


Exhibit 11.11 BC Exports of Fresh Apple by Country (Volume in Kg)

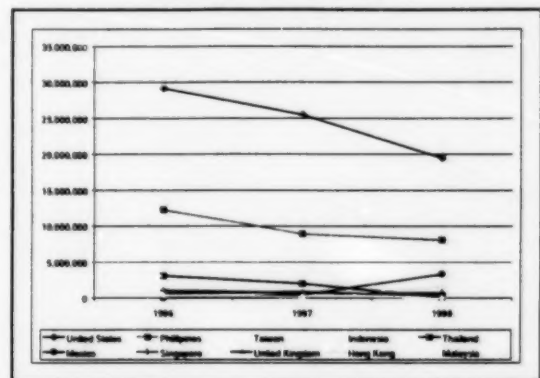


Exhibit 11.12 though Exhibit 11.14 indicates that the top B.C. export destination is United States with Philippines, United Kingdom and Taiwan the next largest.

Exhibit 11.12 Canadian Exports of Fresh Apples by Country 1996 – 1998

	Value (Cdn\$)			Volume(Kilogram)		
	1996	1997	1998	1996	1997	1998
United States	40,607,306	33,569,391	31,161,320	78,677,577	63,069,183	41,166,203
Philippines	10,995,239	7,087,394	5,133,505	12,330,873	8,929,248	8,082,008
United Kingdom	3,950,514	5,398,899	6,183,098	4,262,587	5,701,654	6,359,297
Taiwan	3,360,037	974,239	1,132,492	2,204,033	963,770	1,003,446
Indonesia	2,058,944	2,731,214	188,976	2,560,437	3,815,027	264,937
Thailand	2,674,759	1,650,233	103,988	3,123,114	2,054,856	148,242
Mexico	0	336,244	2,472,678	0	462,997	3,356,944
Singapore	970,756	574,830	778,959	1,096,040	698,669	798,556
Hong Kong	164,268	957,861	1,003,837	190,024	132,121	4,526,528
Colombia	288,249	509,560	191,286	378,011	680,603	323,614
Malaysia	342,727	203,831	68,949	4,233,698	239,934	79,384
TOTAL	67,497,871	54,254,200	49,848,611	107,107,247	88,190,080	64,640,144

Source: Statistics Canada

Exhibit 11.13 Canadian Exports of Fresh Apples by Country 1996 – 1998 (Value in Can\$)

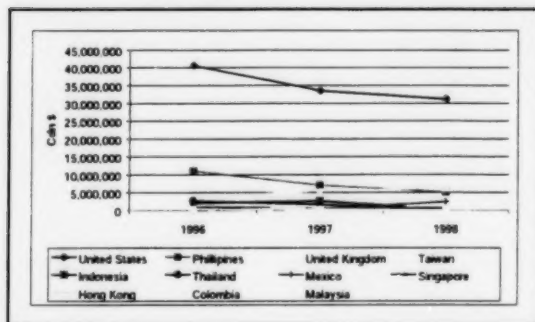
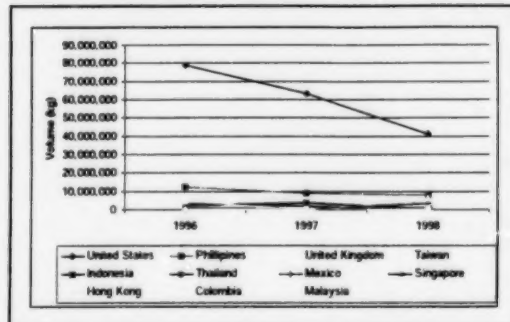


Exhibit 11.14 Canadian Exports of Fresh Apples by Country 1996 – 1998 (Volume in kg)



B.C. exported approximately 36% of volume and 62% of the value in the year 1997 as noted Exhibit 11.15.

Exhibit 11.15 Canada and British Columbia Total Production, Export and Import Values, Fresh Apples by Country

	Value (Cdn\$)		Volume(tonnes)	
	1997	1998	1997	1998
British Columbia				
Total Production	45,750	50,080	121,740	159,024
Exports	33,845	31,409	44,406	35,709
Percentage of Production Exported	74.0%	62.7%	36.5%	22.5%
Canada				
Total Production	181,815	156,009	502,908	497,831
Import of Apples	115,585,524	125,363,297	114,318,942	115,277,134
Export of Apples	54,254	49,849	88,190	66,640
Percentage of Production Exported	29.8%	32.0%	17.5%	13.4%

Source: Statistics Canada, International Markets Bureau, Market Industry & Industry Services Branch, Agriculture & Agri-Food Canada

United States provides the largest amount of apples to Canada with the majority of the exports in Granny Smith and Delicious varieties as shown in Exhibit 11.16.

Exhibit 11.16 Apple Imports to Canada from the US by Variety 1994 - 1998

	1994	1995	1996	1997	1998
Granny Smith	30,813	23,988	20,855	23,545	22,576
Red Delicious	23,875	21,586	26,271	24,190	20,715
Golden Delicious	13,380	15,579	17,991	19,315	17,732
Gala	n/a	n/a	n/a	1,293	5,791
Empire	739	814	450	840	2,797
MacIntosh	3,401	5,043	2,227	4,982	1,767
Ida Red	219	92	39	131	1,282
Other	11,529	12,981	14,189	19,584	17,958
TOTAL	83,956	80,083	82,022	93,880	90,618

Source: Statistics Canada

Canada major imports of apples are from the United States, New Zealand, South Africa and Chile as shown in Exhibit 11.17 and Exhibit 11.18.

Exhibit 11.17 Canadian Imports of Fresh Apples by Country 1996 - 1998

	Value (Cdn\$)			Volume(Kilogram)		
	1996	1997	1998	1996	1997	1998
United States	82,164,196	86,960,911	93,026,375	82,018,843	94,318,064	90,617,750
New Zealand	11,794,327	10,671,136	11,578,480	6,471,440	6,564,187	8,381,189
South Africa	10,298,693	10,894,496	11,180,966	6,558,024	7,409,785	8,582,201
Chile	990,239	6,430,230	8,890,761	7,646,754	5,475,834	7,108,411
Argentina	210,827	441,626	165,772	197,559	399,469	146,420
TOTAL	115,112,106	115,585,524	125,363,297	100,085,652	114,318,942	115,277,134

Source: Statistics Canada

Exhibit 11.18 Canadian Imports of Fresh Apples by Country 1998 Percentage
(Value in Can\$ and Volume in kg.)

	Value (Cdn\$)	Percentage	Volume (kg)	Percentage
United States	93,026,375	74.2%	90,617,750	78.6%
New Zealand	11,578,480	9.2%	8,381,189	7.3%
South Africa	11,180,966	8.9%	8,582,201	7.4%
Chile	8,890,761	7.1%	7,108,411	6.2%
Argentina	165,772	0.1%	146,420	0.1%
TOTAL	125,363,297		115,277,134	

Source: Statistics Canada

11.4 International Trade And Regulatory Issues

From 1994 to 1997 there has been a downward trend in the number of anti-dumping initiations by Canada, U.S., Mexico, European Union (EU) and Australia with an exception in 1997 when the EU and Australia increased the number of anti-dumping initiations. However, countries are still choosing to protect agricultural commodities using actions such as anti-dumping. Dumping occurs when foreign exporters sell their goods in international markets at prices lower than the price in their home market (referred to as "normal value"), or at prices below cost of production. Countries are allowed to impose anti-dumping duties equivalent to the margin of dumping if it is determined, through a process of investigation, that the dumped imports are causing, or threatening to cause, material injury to domestic producers of the same product. Anti-dumping duties are applied to imports of a particular good from a specified country. The intent is to bring the price of the goods up to the "normal value" in order to eliminate the harm being caused by the dumping to the domestic industry of the importing country.⁹⁷ Research has shown that OECD countries have been the major initiators of anti-dumping cases and that anti-dumping (should explain what dumping and anti-dumping is) actions appear to be related in the long term to economic cycles.⁹⁸ Antidumping cases in apples include the countries of U.S.-Canada, U.S.-Mexico, and U.S.-China.

Current trade issues include:

- WTO issues associated with establishing a sanitary and phytosanitary protocols based on scientific research are of strong concern to the apple trade. Examples of trade dispute based on such issues include quarantine regulations imposed on U.S. apple varieties by Japan.⁹⁹
- Canada's Agriculture and Agri-Food Minister and the International Trade Minister announced the initial position Canada will carry to the WTO discussion in Seattle on Dec 1999. The focus will be on complete elimination of export subsidies, reductions of trade distorting domestic support and improvements in market access.¹⁰⁰ Improved access may lead to new markets for Canadian tree fruit exports.¹⁰¹

⁹⁷ Consultations on FTAA and WTO Negotiations, <http://www.dfait-maeci.gc.ca/tna-nac/discussion/antidum-e.asp>. November 23, 1999.

⁹⁸ Copal, J. and Durance, M. (August 1999). Trends in Market Openness, OECD, Economics Department.

⁹⁹ O'Rourke, D. (1999) World Apple Review 1999 edition, Belrose Inc.

¹⁰⁰ Agriculture & Agri-Food Canada News Release. <http://www.agr.ca/cb/news/n90819ae.html>

¹⁰¹ B.C. Ministry of Agriculture and Food. (August 1995). The World Trade Organization and British Columbia's Agriculture, Fisheries and Food Industries.

- World Trade Organization (WTO) issues affecting Canada include the complexity of the tariffs in the European Union where tariffs are changed each month and vary between varieties. The European Union is an export destination for Canadian tree fruits.¹⁰²
- Currently Taiwan applies a quota system to all product imported to the country other than those from Canada and United States. However, upon acceptance of China and Taiwan to the World Trade Organization preferential treatment would no longer be allowed for these countries. The net result is a potential decreasing the export of apples (primarily Fuji) to Taiwan.
- Anti dumping duty on U.S. Red Delicious apples imported into the Canada expires in 2000. Currently a duty equal to the difference between export price and normal value is applied when the US fob export price to Canada falls below U.S. \$12.99 per 42-lb box.

This may open the possibility for low price U.S. Red Delicious to enter the Canadian market pressuring the price downward.¹⁰³

- The U.S. Department of Commerce has been conducting an investigation regarding the low price of apple-juice concentrate imported from China and other importers (e.g., Hungary, Argent, Chile). The Department of Commerce has filed a complaint against China and other importers contending illegal dumping of product. As of November 16 1999, the U.S. Department of Commerce imposed a 55% duty against most imported Chinese apple juice concentrate. The U.S. apple industry accuses China of selling apple juice concentrate at 91% below cost of production.¹⁰⁴¹⁰⁵ The U.S. has filed and won an anti-dumping action against China for supplying low-priced concentrate. Hungary, Argentina and Chile are also low priced suppliers to the U.S. market.¹⁰⁶
- In March 1998 Mexico lifted the 101 percent anti dumping duty on U.S. Red and Golden Delicious apples. The duty had been in place since September 1997 and will allow the U.S. to regain market share in the Mexican market.¹⁰⁷ Canada has gained market share in apple exports to Mexico in the past two years.

¹⁰² Agriculture & Agri-Food Canada, Market Industry Services Branch. (March 25, 1999). 1998/1999 Canadian Fruit Situation and Trends.

¹⁰³ Agriculture & Agri-Food Canada, Market Industry Services Branch. (March 25, 1999). 1998/1999 Canadian Fruit Situation and Trends.

¹⁰⁴ Spencer, H. (December 23, 1998) Locke fights for apple industry. Seattle Times.

¹⁰⁵ Paulson, M. (September 20, 1999). Apple Growers Accuse Beijing of 'dumping', Seattle Post.

¹⁰⁶ Agriculture & Agri-Food Canada, Market Industry Services Branch. (March 25, 1999). 1998/1999 Canadian Fruit Situation and Trends.

¹⁰⁷ USDA, Economic Research Service, Market and Trade Economics Division. (September 1999). Fruit and Nuts Situation and Outlook FTS - 286.

11.5 Impact Of Changes In The Retail Sector On Industry Structure

The Produce Marketing Association (PMA) indicates that the food retail industry is currently going through a strong consolidation. The result of this consolidation is that a smaller number of retail produce buyers have stronger buying power and greater control over a larger share of the retail purchasing market. This makes the suppliers ability to consistently supply high quality product in a timely fashion even more important as the number of retail accounts is diminishing in a global market where the retail buyer has a choice of B.C. or international supplies.¹⁰⁸ Also, price negotiations by retailers are much stronger based on the intensity of retail competition and the high relative strength of the retailer as a buyer.

Other issues of concern researched by Cornell University Food Industry Management Program for PMA indicates the following: Produce executives want to work with "preferred suppliers" and show a movement to purchasing greater quantities direct from grower-shippers and less from the traditional terminal market.¹⁰⁹

¹⁰⁸ Produce Marketing Association <http://www.pma.com> November 4, 1999.

¹⁰⁹ Produce Marketing Association. (1999) FreshTrack 1999. Cornell University Food Industry Management Program.

12. B.C. Marketing Board

In January 1998, the B.C. Marketing Board (BCMB) conducted a review of the Regulated Marketing System. A set of recommendations was developed. The B.C. Tree Fruit Marketing Board (operationally inactive for a number of years) was reviewed under this process. The BCMB recommended the board be revoked in March 2000 as it not active and has not demonstrated a purpose under the regulations review process. The Board will be dismantled unless it can demonstrate that it has a purpose and the support of the stakeholders.¹¹⁰ In August 1998 the B.C. Tree Fruit Marketing Board (BCTFMB) provided a strategy & review report recommending that a new role for the BCTFMB. The new role would include: maintaining a grower registry, on-farm food safety, maintaining membership in the Council of Marketing Boards, ensuring fairness in paying for industry projects that universally benefit all producers and developing on-farm food safety and quality standards.¹¹¹

13. Summary Of Recommendations For Further Research

Overall, one of major needs appears to be to regularly collect (and provide in value added format) the quality market information that industry members and producers can use in their business management planning decisions. Several experts used a term "orchards isolation" referring to the isolation of producers to the world, consumer and variety trends. Examples of further areas of research that focus on this concern include:

Price information

- Currently the InfoHort wholesale data is not available in a summary form making it difficult to track prices over time. Therefore, although the information is detailed and readily available it may be beneficial to the producers and channel members to have this information collected and organized by a central agency and presented a format that would be of greater benefit to producers (e.g., comparing grower returns to wholesale prices)
- Price information for each market channel (e.g., independent versus cooperative packer) at the wholesale level is not readily available. However, this competitive information would be beneficial to producers to compare returns between packinghouses.
- Specific grade to price at the farm level is not readily available from secondary sources. However, the market would of strong benefit to producers and channel members as again it would allow them to determine the premium provide this information for quality. It may be beneficial to collect this price-grade information from packinghouses, aggregate data and then present it in a summary form to producers and packers to incorporate into their business decisions.
- Canadian retail prices for tree fruits as well as specific varieties and grades of fresh fruits are not readily available. This price per variety if collected and summarized would be beneficial to producers and packinghouses in assisting them in making market decisions.

Consumer Trends Data

- Research to collect primary data and/or alliance with those that are collecting data and then providing this to the producers and packinghouses.

¹¹⁰ BCMB. (February 1999). The Evolving Regulated Agriculture System, Review of the Regulated Marketing System

¹¹¹ Strategy for the Bacteria Fruit Marketing Board August 1, 1998.

Organics and other potential markets

- Research into the area of organics (e.g., price potential, consumer demand, volumes, strong markets, and channels) as well as other potential geographic or demographic markets.

Variety data

- Collection and summary of world variety data over time and on a regular basis to provide accurate data to the producer.

Appendix I References

In addition to the direct references note in the report, the following general references provided pertinent background information that may be of interest to consultation participants.

- PARC, Summerland (1998). Better Taste for Apple Breeders, Volume 6, Number 1 1998, Growing Ideas.
- O'Rourke, D. (March 1997) Trends in Production, Utilization, and Price of Washington Apples to 2005, IMPACT Center, Information Series #90
- Shi, H. and Wahl, T. (May 1996) Recent Developments in the Chinese Fruit Industry: Implications for the U.S. Fruit Industry, IMPACT Center Information Series #83.
- IMPACT Center, Washington State University. (May 1999). IMPACT Center Half Yearly Report.
- U.S. Apple Association. Apple Statistics - Industry Information.
<http://www.usapple.org/industryinfo/stats.html> October 28, 1999.
- O'Rourke, D. (February 1998). World Apple Marketing Dynamics, Paper presented at the 41st Annual IDFTA Conference, February 21-25, 1998, Pasco, Washington.
- USDA. (1998). 1998 Annual Bulletin Fruit, <http://www.nass.usda.gov/wa/annual98/fruit198.htm> October 28, 1999.
- B.C. Statistics, Ministry of Finance. (1999). Trade data British Columbia and Canada.
- Agriculture and Agri-Food Canada, Trade Evaluation and Analysis Division. Annual import and export data for Canada and British Columbia, Select years.
- USDA, Foreign Agricultural Service, Horticultural and Tropical Products Division
<http://www.fas.usda.gov/htp/> October 29, 1999.
- USDA, National Agricultural Statistics Service, 1997 Census of Agriculture.
- O'Rourke, D. (June 1998). Impact on Pacific Northwest Agriculture of the Asian Financial Crisis.
<http://impact.wsu.edu/> October 27, 1999.
- Richards, T. and Patterson, Paul. (August 1999). The Impact of Promotion and Advertising on Choice of Fruit Category and Apple Variety: A Latent Class Approach. Paper presented at the American Agricultural Economics Association.
- Robbins, L. (March 1999). Profile of the New Canadian Consumer: Demographic and Economic Situation, Marketplace Behavior and Buying Patterns, Statistics Canada, Food Bureau.

f:\umg\bc ag1\november 23-24\marketing\marketing final nov 24.doc